

ARCHITECTURAL REVIEW VOLUME CXXIX NUMBER 771 MAY 1961 FIVE SHILLINGS

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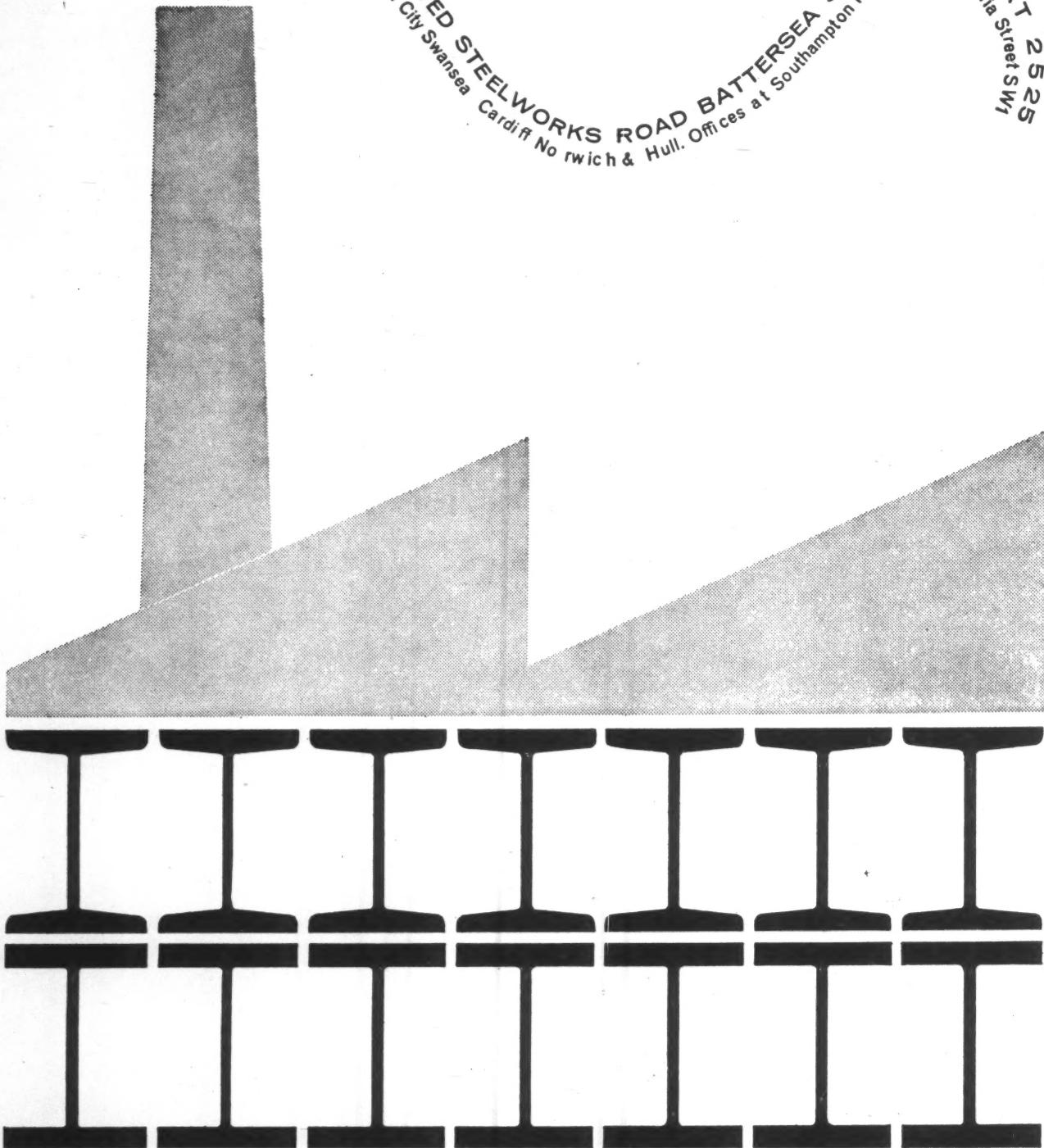
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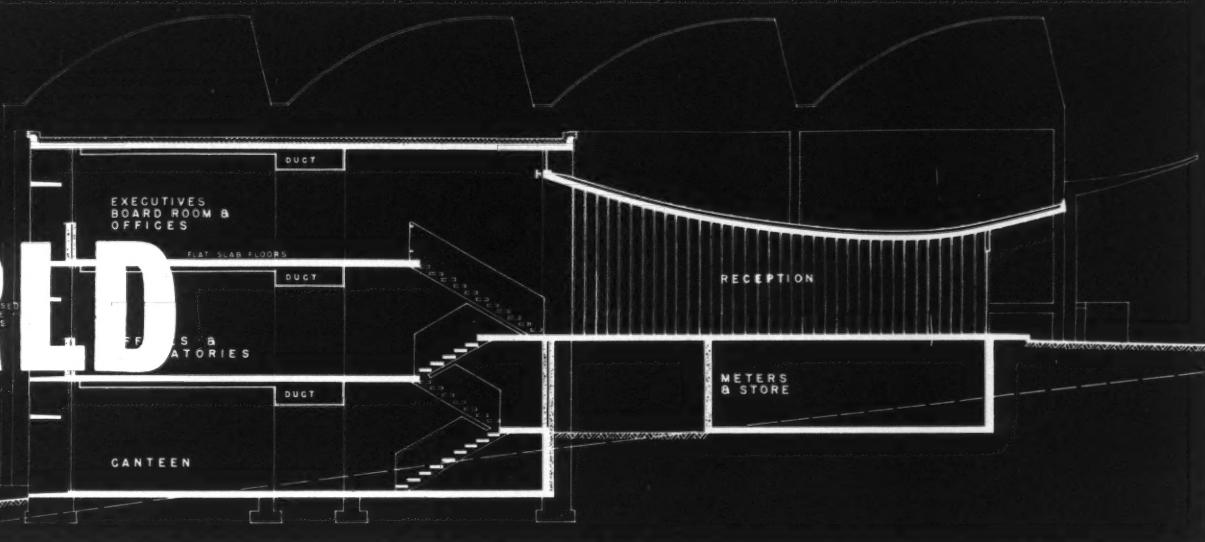
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# WORLD



1

## CIBA & SEIDLER

When the CIBA company, with its international reputation for enlightened patronage in architecture (Eiermann, Arup, among others) encountered Harry Seidler, probably the most highly esteemed architect in Australia, the results promised to be as distinguished as they have proven to be. The section, seen in 1, reveals almost the whole story of an ingenious and satisfying building—a factory outside

Sydney. A sloping site, falling to the sunward side, gives a section that fills out rapidly in depth, from a single-storey entrance bridged over an access way, 2, to a three-storey office block whose main façade, lying away from the road, needs a brise-soleil because of its orientation, 3. Beyond a linking passage over a drive-in for trucks, lies the main factory whose 'north-light' vaults inevitably face the road, not the



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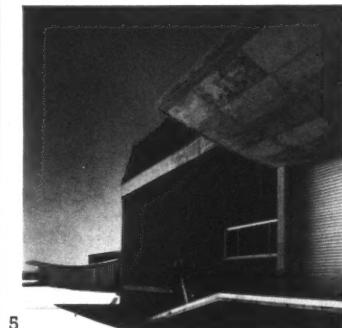


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scene commanded by the shaded windows of the office block, 4. The loading dock canopy, 5, echoes the spritely

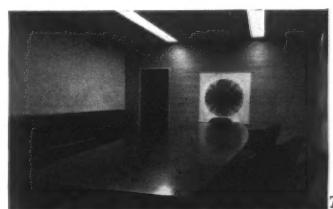


upward curve of the forward part of the office entrance canopy whose long curve from front to back gives an interior of distinctive form when

6



viewed from the top of the office stairs, 6. The building, as a whole, is a long way from Seidler's better known domestic work, and this sagging roof is more likely to recall that of Robin Boyd's house, AR November, 1960, but some, at least, of the interiors he has designed for CIBA strike exactly the note one would expect him to strike, 7, in a building of this sort.



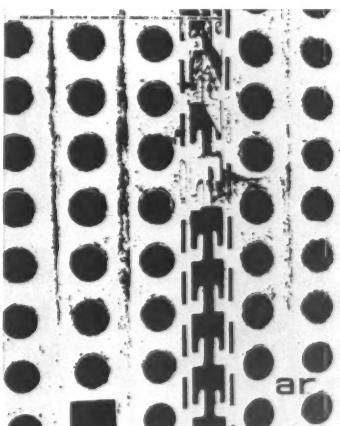
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## MODERN MONUMENT DESTROYED

The Modern Movement lost another shrine in 1960—Eric Mendelsohn's classic of commercial architecture, the Schocken store in Stuttgart, was demolished and the site had been cleared by the end of the year. Anton Henze wrote out its epitaph in a mood of justifiable bitterness in *Deutsche Bauzeitung* 2/61—"an epitaph on a tomb without grave or corpse."

## ACKNOWLEDGMENTS

WORLD, pages 293-296: 2-7, Max Dupain; 8-11, *Deutsche Bauzeitung*; 12, 13, *Arts & Architecture*; 14-18, *Progressive Architecture*; 19-22, *Kokusai Kentiku*; 23, *Kenchiku Bunka*; 24-28, *Zodiac*. VIEWS AND REVIEWS, pages 297-299: 1, Mimmo Castellano; 2, George Weigel. FRONTISPIECE, page 300: James Mortimer. PSYCHIATRIC INSTITUTE IN MILAN, pages 304-307: model, page 304, Fortunati; 1, Publifoto; 3, 10, Foto Porta; 5, Fotogramma. RAILWAYS AND REGIONS, page 308: Toomey Arphot. SOME RECENT BUILDINGS FOR THE RAILWAYS, pages 313-320: 1-3, 6, 7, 19, 21, 23-28, 30, 32, 33, British Railways; 4, 5, 29, Sam Lambert; 8-18, 22, 31, British Transport Commission; 20, Logan. OVER UNDER, pages 321-336: 30, The Royal Library, Windsor. ID, pages 327-340: Gown Shop in Nottingham, 1-4, W. E. Middleton & Son; Bookshop in the City, 1-5, Galwey Arphot. CURRENT ARCHITECTURE, pages 344-349: 1-6, Galwey Arphot; 7-12, Toomey Arphot; 13, 14, C & CA. MISCELLANY, pages 350-354: Exhibitions, 1, 2, National Gallery; 3, Arts Council; Roads, 1, 2, 4, 5, Toomey Arphot; 3, Galwey Arphot; Plants, 1, 4, Jane Bown, *The Observer*; 2, J. E. Downward; 3, Galwey Arphot. SKILL, pages 355-360: 4-7, Galwey Arphot. THE INDUSTRY, pages 360-364: 1, Walton Adams & Son.



The Cover shows a detail of war-time steel track-plates re-used as a fence somewhere in Apulia, Italy. More important than the subject however, is the technique used in reproducing the picture. This is one of a number of dramatically posterized photographs (that is, with half-tones suppressed) from Mimmo Castellano's book *Moods*. Though this technique produces images that are striking enough in their own right, they have a peculiar significance for Castellano, as explained in a note on the book on page 297.

## THE ARCHITECTURAL REVIEW

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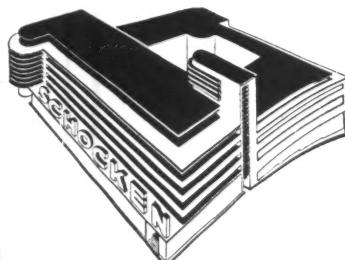
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## Schocken

Whatever the reputation of Mendelsohn outside Germany—up one day, down the next—his fellow-countrymen recognized a great professional and, in half a dozen key buildings, a great innovator. The Schocken store (masqueraded as a *Kaufstätte Merkur* for some years past) was one of the most important, the first real step forward, 8, in department store design since Louis Sullivan's Carson, Pirie and Scott, and completed at about the same time as the now better-known exhibition houses at Weissenhof just outside the town. Unlike the exhibition houses, however great their architects, which have come to look nervous and self-conscious with the passage of time, the Schocken store still looked, thirty-three years after its completion, a convincing piece of commercial architecture, carried off with a grandeur of conception that little since has rivalled in this field of design, and a gimmick, the projecting and entirely functional glazed stair-tower, 9, that a hundred architects (including Mendelsohn himself) have subsequently tried to emulate without ever achieving the same air of conviction.

But Henze has more reasons than this disappearance of good architecture for his bitterness. Schocken survived the bombing of Stuttgart by centimetres, and became something of a symbol of the enduring commercial vitality of the most commercially vital city of southern Germany ('Mercedesburg'). Apart from this purely civic significance, the preservation of Schocken also became something of a test of taste, of the sense of the masterpiece standard in modern architecture. The staff and students of the Technische Hochschule, headed by men of the calibre of Jürgen Joedicke (to name only the best-known internationally), campaigned locally and internationally for its preservation, armed with a planning proposition that would have saved it at least from the highway-mania that seems to beset all city engineers—to move the pavement behind the display windows, 10, in order to accommodate the widening of the Eberhard-Str. without demolishing the building, while satisfying the Merkur company's need for more sales space by extending the back of the block towards the Hirsch-Str. But it seems clear that Merkur themselves



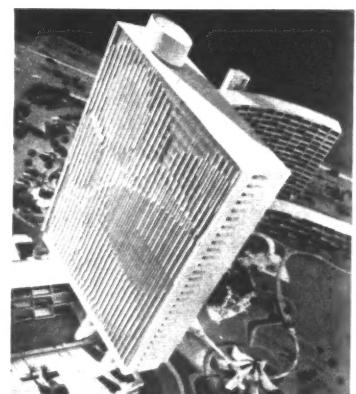
had no interest in keeping what, over the years, would have become a growing prestige-asset, and this rare exercise in Modern-Movement preservationism came to nothing. There may be an ironic justice in this; that—as H. R. Hitchcock has recently pointed out in *Zodiac* 7—the one aspect of Futurist theory that has come abundantly true is that the greatest modern buildings are rarely allowed to outlive their creators by any significant period of time, 11, but we may properly ask which we would rather preserve—the Futurist ethic, or the masterpieces it inspired?



One hears and sees so little of architecture in the Hawaiian islands that we must be grateful to *Arts and Architecture* for illustrating even a project that is still in the 'perhaps' stage. The scheme is for an apartment-hotel development near a main traffic artery of Honolulu, and consists of 596 *lanai* apartments grouped in three blocks, 12,



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façade pattern really derives from 'natural function,' then either the *lanai* apartment must be a more variable form of living than one had previously understood, or else the micro-climate of Hawaii is subject to very abrupt local variations.

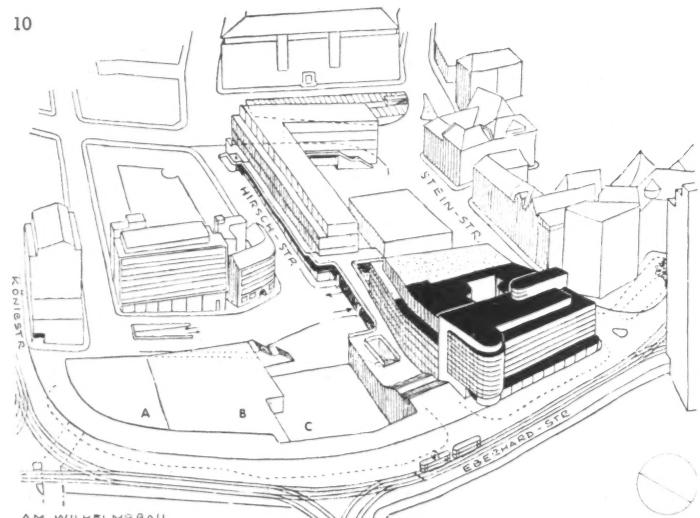
## 'take a liberal attitude'

### P/A AWARDS AND ENGLISH THEMES

*Progressive Architecture's* annual design awards (the current set are in the issue for January, 1961) not only give a useful picture of what brighter Americans have on their drawing boards, but also a cross-section of what bright US critical opinion will stand for. This year's selection jury comprised: Dean Colbert of Columbia University, O'Neil Ford, Walter Netsch of SOM-Chicago, Chloethiel Smith (inelegant name for an elegant lady architect) and Philip Johnson.

Quotable jury opinions turned frequently on the apparent stylistic chaos, and Philip Johnson looks as if he wrapped up Jury opinion fairly effectively by saying 'Frankly I wouldn't build a building like any of these, but I hope we can take a liberal attitude—I think I should honour good design wherever it appears.'

The chaos of style was real enough—hyper-plasticity, fortress-romanticism, umbrella-slabs and snake plans jostling one another in highly liberal, positive Manchester-liberal, confusion—but a European eye, an English eye, will find some familiar and homely friends among them. This is particularly true of two projects that attach themselves

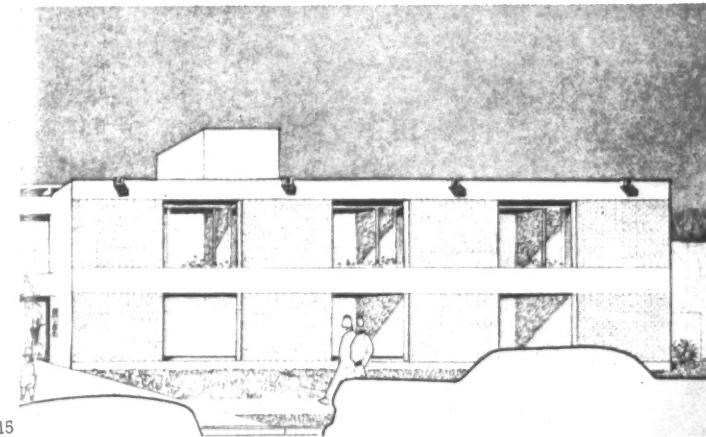
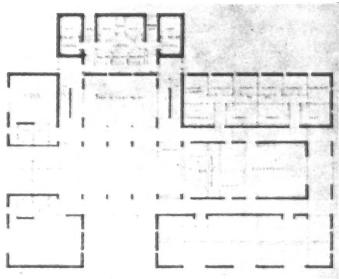


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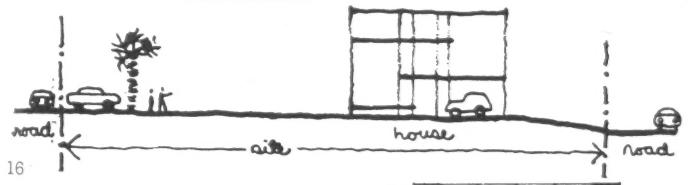
## P/A awards

to the name of Robert Ernest. In the first case he appears as project manager for Mann and Harrover in the design of a citation-winning Speech and Hearing Centre in Memphis, Tennessee. The plan, 14, has the slightly diagrammatic and open, almost Beaux-Arts, quality of much recent 'representational' architecture in the USA, but with the construction and elevations we are entirely at home, load-bearing brick and concrete slabs, 15, in

14

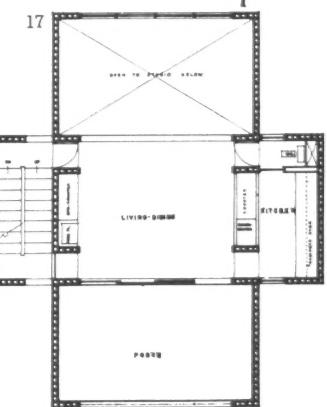


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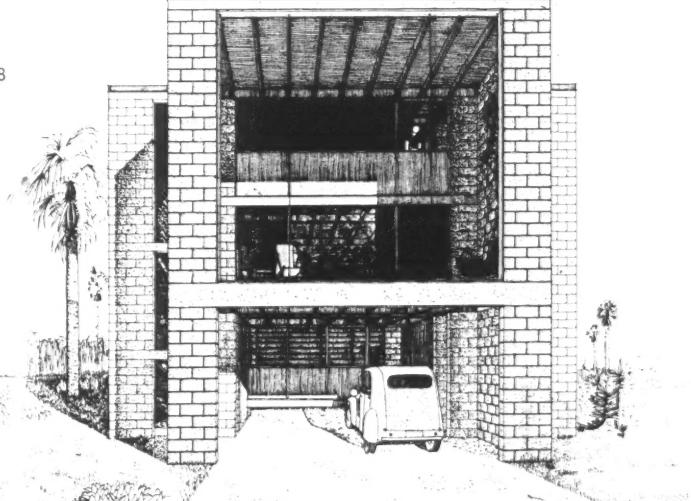


a manner that is almost Stirling-and-Gowan.

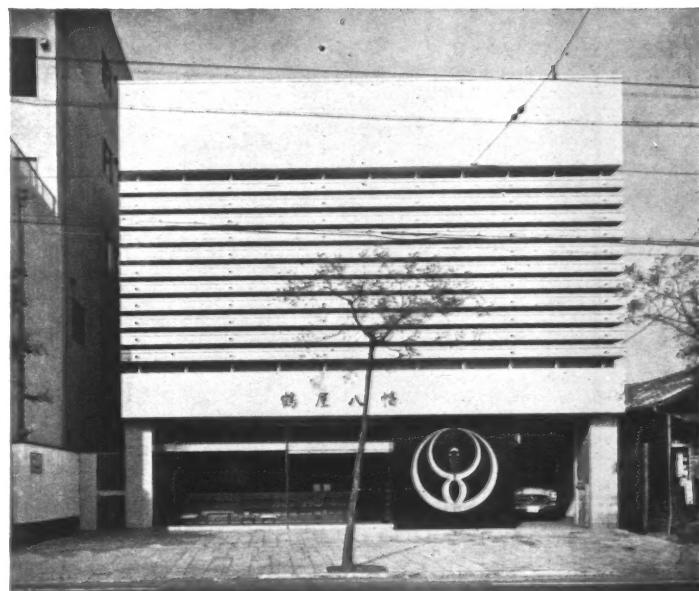
In the other citation-winning project, Ernest appears as architect, pure and simple, in a house for his own occupation at Atlantic beach, Florida. With a triple-split section for ocean views, 16, it again features load-bearing walls and concrete tie-beams that give, at first sight, the effect of concrete slab floors, 18, though the floors are, in fact, wooden. The quality of the exterior, coupled with an almost Neo-palladian plan, 19, strongly recalls some of the ideal projects for small houses that never quite got built, that were in evidence in Britain some six or seven years ago.



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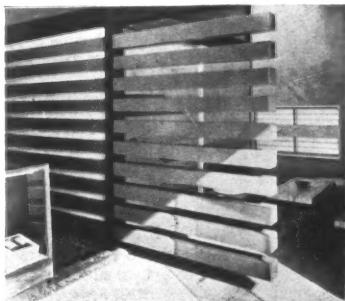
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## TRADITIONAL?

*stylistic reminiscence in two Tokyo shops*

Clearly aware that it had a hot contrast of styles for similar functions on its hands, *Kokusai Kentku* recently published (December, 1960) two shops in Tokyo that stretch the Westerner's idea of 'Japanese' to the limit. One is a branch of a confectionery chain designed by Matuda and Hirata, whose slatted façade, 19, consistently echoed in the interior, 20, combines with elegant symbols and calligraphy to sum up an image of what many Western eyes are looking for in Japanese architecture today.

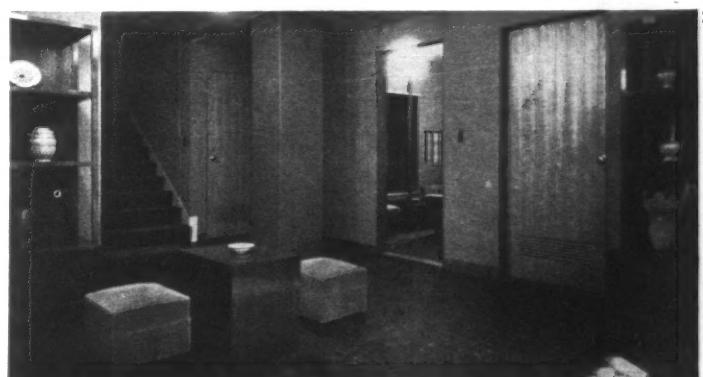
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The other is an antique shop, designed by Kenzo Tohata and associates, whose exterior, 21, and interior, 22, seem to be almost pure Bankers' Georgian, enlivened by slight touches of modernism that echoes only too drearily the kind of conformist non-architecture being erected in the City of London to this day. Yet K-K, in reviewing these two shops, feels constrained to comment on the persistence of Japanese tradition in this latter example, as in the use of coloured plasters inside and out, quite as much as in the former case, where



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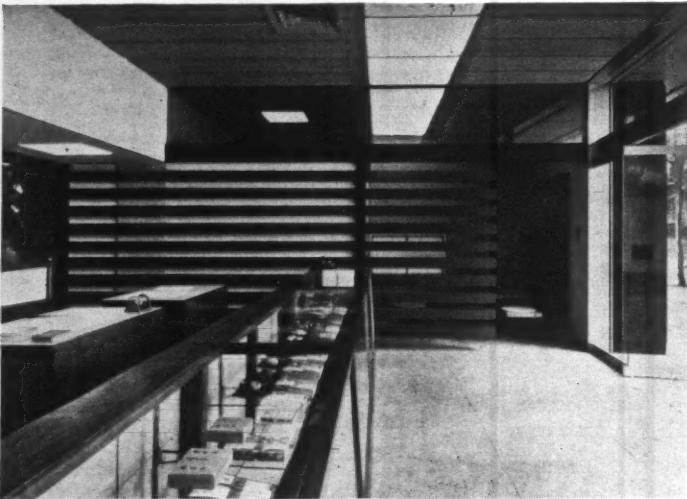
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## tradition?

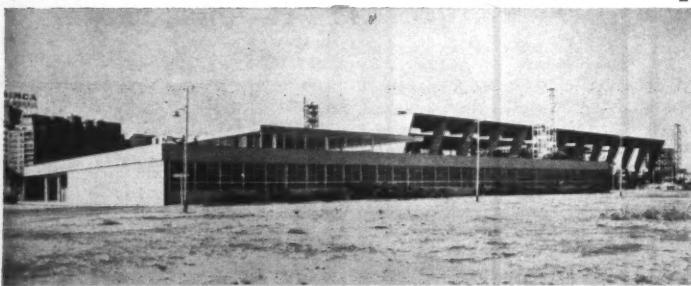
it points out that in spite of the continuance of the traditions of the Kansai local style, 23, the materials are

not 'bamboo, selected fine wood or other traditional materials,' but gold-anodized aluminium sections for the exterior and red-lacquered wood for the interior screens.



23

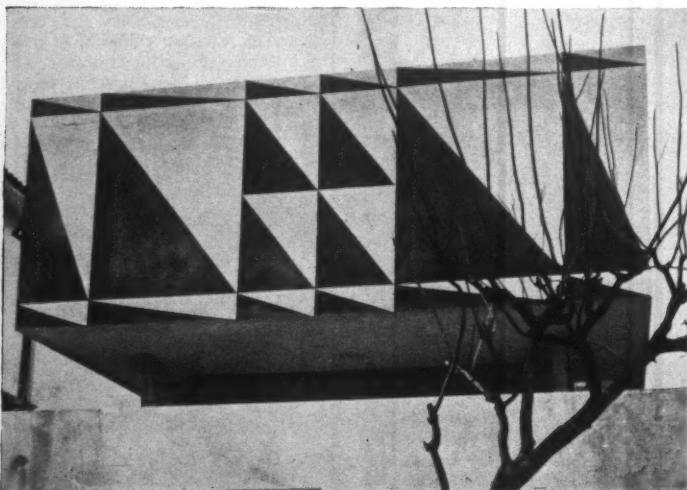
## ZODIAC'S BRAZIL



24

The backwash of Brasilia and the sundry conferences called to celebrate its inauguration has not yet subsided—a substantial ripple broke recently across the pages of *Zodiac 6*, in the shape of a *Rapporto Brasile* by various Brazilian and Italian hands. Much of the information contained in the *Rapporto* was hardly news, though some of it constituted a useful set of progress reports on buildings such as Reidy's Museum of Modern Art in Rio, 24 (AR as long ago as May, 1954!)

There were some discoveries, however: Artigas was promoted Brutalist on the strength of his Mendonça house, 25 (again an exclamation mark, if only for the misuse of the word *Brutalist*) and a missing work of the Roberto Brothers was brought to light again by Giulia Veronesi. Though not very remarkable in form and planning, the apartment block, 26, on the Rua Marques de Herval in Rio deserves to be remembered as an unusual contribution to the small anthology of



25

democratic façades—that is, where the external appearance is governed by the activities of individual occupants of individual rooms. The *locus classicus* of this 'statistical architecture' is, of course, the play of lights and curtains in the grid of Mies van der Rohe's Lakeshore façades. Rua de Herval, on a different tack, takes the Ministry of Education adjustable-sunshade effect to its chaotic conclusion. Each window is screened by a small shelf of fixed slats, and a free-swinging blind carried between steel-tube brackets, 27. As there are no other strong visual elements on the façade beside these shades, the effect when every citizen has expressed his attitude to sunshine is, in detail, complete visual entropy, 28, such as only the sheer bulk of the building, as seen in a long view, can bring to order.



26



27



28

## views and reviews

### MARGINALIA

#### BROAD SANCTUARY COMPETITION

The publication by the Ministry of Works of the competition Conditions and Instructions is welcome, if belated, evidence of an intention to do something positive about the unsightly hole marking the site of the demolished Westminster Hospital and the abortive Colonial Office building just across Broad Sanctuary from the west front of Westminster Abbey.

The site has lain fallow since the sub-structure of the ill-fated and much-abused Colonial Office project was built, and then abandoned in 1952. The new building, which is the subject of the competition, is to provide about 80,000 square feet of government office space (for the Treasury Solicitor and Parliamentary Counsel) and a conference centre with one large hall and nine smaller meeting rooms. All this accommodation, and all necessary ancillaries, will have to be packed on to the rear two-thirds of the site, leaving the front part open. This is the nearest thing to an aesthetic directive included in the Conditions and Instructions, and deals with the main objection to the old Colonial Office project, which was that it crowded too massively forward on to the Sanctuary—an open space which, however traffic-ridden, is vital to the urban character and *Genius Loci* of Westminster—as the REVIEW has pointed out on many occasions before now. In the absence of further aesthetic directives, the Instructions might have dwelt more forcibly on the special character of adjoining buildings, such as the Central Hall, Middlesex Guildhall, etc., or provided better photographs of them, because the visual polyphony of their varying styles will require either considerable tact or considerable originality on the part of any new building intervening. In the circumstances, the absence of any expressed stylistic preference in the Instructions is reassuring, and the more so when coupled with the names of the assessors—Sir William Holford, Sir Leslie Martin and Eric Bedford, chief architect to the Ministry of Works.

#### A MALL EVALUATED

The temporary pedestrianization of Sparks Street, Ottawa (described in AR, February 1961) was visibly an aesthetic and human gain to the city, but gains of that sort do not always sway tight-fisted civic authorities, or persuade them that such pieces of urban humanism should be made permanent. Now that the report\* on the Sparks Street Mall has been issued, however, it appears that humanism can be costed, and accounted profitable.

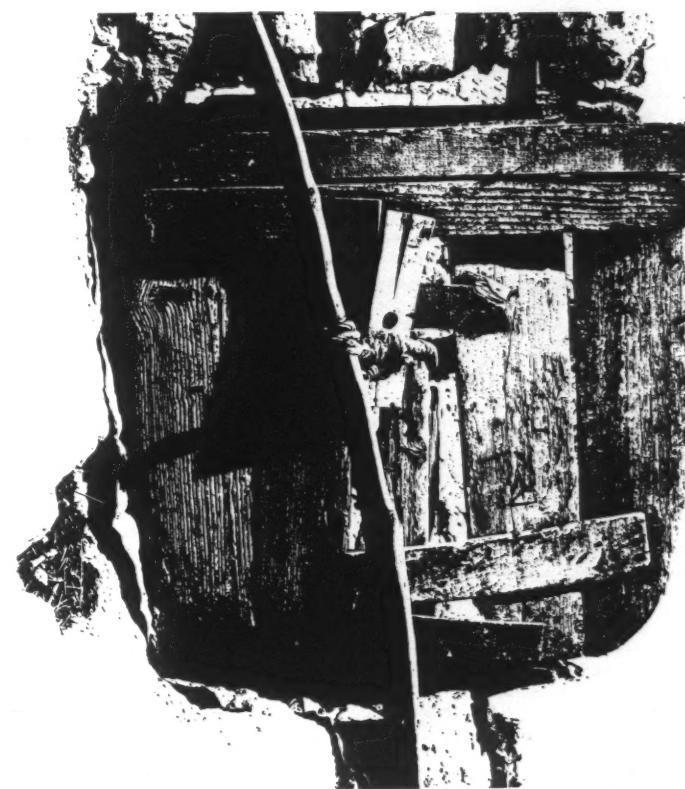
The report studies practically every aspect of the exercise that can be

studied, and quantifies the results wherever they can be expressed numerically. Retail business of shops in the Mall was measurably higher during the pedestrian period than during the equivalent months of the previous year, and in some trades the increases were of a sensational order—men's clothing up by 29 per cent and restaurant business up by 34 per cent at a time when the rest of the city showed a decline of one half per cent. The impact of these figures on the most sensitive sector of the municipal vote might well prove decisive when the question of a permanent Mall in Sparks Street comes up for discussion, and if the shopkeeper vote can be counted on in favour of pedestrianization there is hope of similar civic improvements in many places—at home as well as abroad. This vote is notoriously conservative on such matters (the failure to close the Stow, in Harlow new town, was a case in point).

Even more interesting from the town-planning point of view was the effect on traffic flow in the Ottawa experiment. Although some of the purely local conditions are obviously not repeatable in other cities, the separation of the bus routes from the shopping area, due to the re-routing of the eight bus-routes that originally used Sparks Street, so smoothed out traffic flow that, over a section of route that previously included the Mall stretch, there was a 42 per cent improvement in elapsed time during off-peak hours, and a 25 per cent improvement during rush-hours. In addition, Sparks Street retailers, and about 60 per cent of bus travellers who answered a questionnaire, expressed a preference for keeping buses out of Sparks Street in future, and the Ottawa Transport Commission has decided to make the 'temporary' re-routing permanent—another factor that could be brought into arguments elsewhere.

#### MOODS

The brilliant photographs of houses built *a trullo* which appeared in *The Exploring Eye* (AR, December, 1960) were the work of a local photographer, born and brought up in Apulia, Mimmo Castellano. Their sensitivity to local atmosphere and the quality of materials, naturally inspired the hope that other works of his camera might become available, and now they have—he held an exhibition at Libreria Salto, Milan, in March and a little before that published a strange and brooding book entitled *Moods*,\* using the English word to express something that Italian, for various reasons, cannot. *Moods* is a book about *things*—sheds, half-built fishing boats, old bicycles, oil lamps, pieces of wood, door-latches, fishing tackle, railway engines—things which he believes to have states of mind, atmospheres, modes of being that are somehow connected with his own. The book and the photographs were long contemplated but, as he explains in his foreword, the project went stale on him and was shelved, until, after an elapse of time, the coincidence of effects of moonlight on the walls and structures of south Italian towns, with other effects observed while working with photographs in the



1, an illustration from Mimmo Castellano's *Moods*.

dark room, 'gave back life to emotions, enthusiasms and anguish submerged for years, and suddenly, in the red gloom of the dark room, it all burst on me . . . the old photographs and the new, relieved of the weight of reality and become almost pure images in their concise essential forms, re-established connection . . . from my memory emerged a time re-found.'

The visual effect on which this depended is made permanent in the book by posterizing the photographs—that is, by eliminating all intermediate tones between white and black, and thus simulating (accidentally) the sub-lunar and elusive glare of scotopic vision (that is, vision in light intensities too low for colours to be distinguished, as in moonlight). The results, 1 (above), and the cover of this issue, may slightly remind English readers of the Brutalist photography of Nigel Henderson, but it enshrines a different mode of vision, and a

different attitude to the manipulation of the print, if only because it involves the whole process of reproduction down to and including the machining of the sheets that will be bound up into the book.

#### AWARD FOR AIRPORT

The New Zealand Institute of Architects has given its gold medal for 1961 to Mr. Paul Pascoe for his airport building at Christchurch. The building was illustrated, while still not quite finished, in the AR for October, 1959 (a special number on recent work in the four Dominions of the British Commonwealth). Below, 2, is a completed view of the exterior.

#### SHOPS AT CAMBRIDGE

The arched shops at Cambridge, designed by Hughes and Bicknell and illustrated in the March REVIEW, were not built; as stated then, on



2, Paul Pascoe's award-winning airport building at Christchurch, New Zealand.

\*National Capital Commission, \$3.

land belonging to Christ's College. Most of the land belongs to Jesus College, who are joint ground-landlords with Christ's and who were largely responsible for promoting the scheme. It was financed by Ravenseft Properties Ltd.

## CORRESPONDENCE

## BEYOND BRUTALISM

To the Editors.

SIRS.—I suggest you might like to send the accompanying sketch plan to Mr. Jason Pickford\* at Melbourne Technical College with my compliments. It is not nearly so impractical

against the concrete or metal down-pipes or cylinders. Square-set plate glass with inset washing devices for the tops of the lighting tubes; rainbow glass in the corridor and alleyway lighting; and, of course, walls within the board-course outer concrete, of alternating eucalyptus or Bluegum and Maple would provide efficient insulation and textural variety!

Yours, etc.,  
RONALD ROLF.  
Hemel Hempstead.

## THE GREENWICH LAYOUT

To the Editors.

SIRS.—I am sure you are tired of the Greenwich controversy.\* There are obviously two schools of opinion. I wish merely to add that Messrs. Wright and Braxton Sinclair have produced no documentary evidence

\* Yes, this correspondence is now closed.  
Editors.

to refute the facts contained in my letter. Their hypothesis rests on the authorship of the sketch for the Queen's House published by Chettle as by Jones. This has now been re-catalogued by the RIBA as by Webb, because the hand is unlike Jones's and the elevation is closely linked to Webb's design for Belvoir Castle (1650). Mr. Wright condemns out of hand the Worcester-College Jones design for the Queen's House. This is in direct contradiction to the recently published literature upon the early draughtsmanship of Jones. May judgment be suspended upon this issue until scholars can re-examine the documents, i.e. until the monumental history of the Office of Works appears? Then I will be vindicated.

Yours truly,  
JOHN HARRIS.

The Library,  
Royal Institute of British Architects.

## BOOK REVIEWS

## GOTHIC SOLUTION

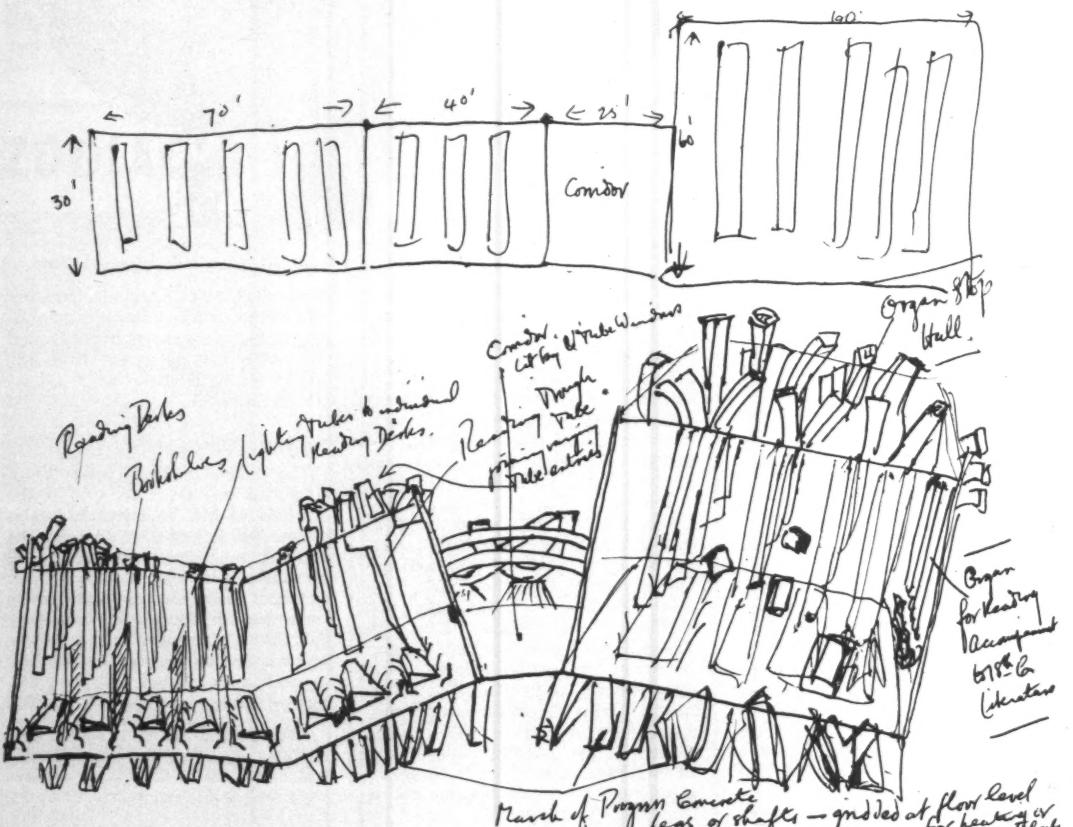
THE CONSTRUCTION OF GOTHIC CATHEDRALS. By John Fitchen. Oxford University Press. 63s.

We don't really know how Gothic cathedrals were constructed. What you read in books is still Viollet-le-Duc's hypotheses, only to a limited extent modified by such books as Ward's of 1915 and Andrews's of 1925. It was high time for a scholar to tackle the problem afresh, and Professor Fitchen brings to the job a training as an engineer, a splendid Robinson-Crusoe feeling for simple, common-sense solutions of tricky tasks and a very thorough reading.

He, also, cannot offer more than hypotheses; for there is no documentary evidence, and there are no drawings or pictures in illuminated manuscripts that would be early enough. But Professor Fitchen's hypotheses are more closely argued and more ingeniously thought out than any before. He visualizes constantly the technical limitations of the thirteenth century: poles for scaffolding, lashed together with rope, nails a rarity, trunks squared roughly with the adze; planks, therefore, a luxury—and also such more general things as thinking in terms of savings in materials rather than labour; a tempo of work entirely controlled by handicrafts, a machine—one of the few—such as the windlass being able to lift only vertically and not, like a crane, diagonally, and so on. Professor Fitchen goes to examples of present-day primitive building, especially in undeveloped countries, to demonstrate constructional techniques. He also visualizes constantly that, while building went on above, services had to be held below and the nave or chancel space kept unencumbered, and moreover that whatever scaffolding and centerings you erect inside the building, must be erected so that they can be taken down and reused—a problem which raises far more difficulties than anyone before Professor Fitchen had recognized.

His book is consequently not an easy one, but it will fascinate any architect with a penchant for doing it himself. It is divided into a text for reading, nearly 50 pages of notes, well over 50 pages of appendices, and a long glossary. The appendices range from a new (and not convincing) interpretation of a famous passage in Abbot Suger's description of the building of St. Denis, to surviving putlog holes. As for Suger, Professor Fitchen believes that the *principales arcus* which swayed in the gale were not the arches and ribs high up, but flying buttresses; but flying buttresses seem to have been invented only in the 1160's or 1170's (Notre Dame Paris, St. Remi Reims, Canterbury) and not twenty or thirty years earlier, i.e. at the time when St. Denis was being built.

Altogether in the field of architectural history strictly speaking Professor Fitchen is not an entirely safe guide. Villard did not go to Bohemia but to Hungary, for groined vaulted naves one must include Germany as their central area and cannot confine oneself to Burgundy, the rib-vaults of

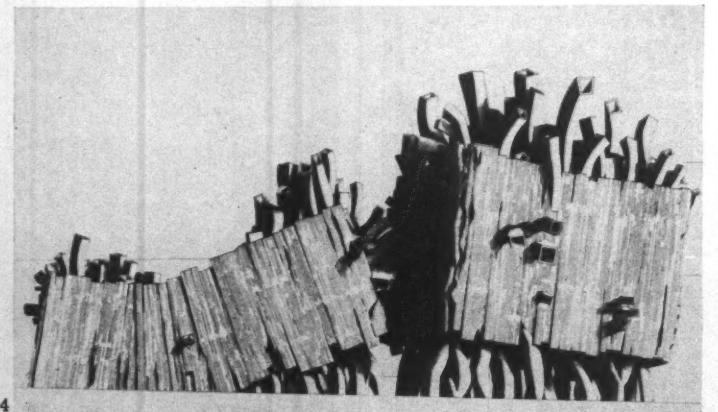


3, plan suggested by Ronald Rolf for Jason Pickford's project for a library, 4.

as the exterior might suggest. Indeed from the point of view of exclusion of viewpoints in windowless walls; the concentration of skylights on the printed (or MSS) word; and the introduction of Handelian harmony in Organ Stop Hall as an accompaniment to 18th century literature, I think the students might easily achieve a first in comparative vorticism.

You will note the practicability of reading desks compartmented by double sided library shelves and the back support whilst on the Library steps afforded for literary browsing

\* Designer of the project which was the subject of the February AR cover (illustrated again right) and described as not possessing a plan. Editors.



Vézelay surely are not late eleventh century, and so on. There are also occasionally misprints (St. Georges-de-Boscherville, Cresswell). But then this is a book on construction and not on architectural history, and there Professor Fitchen is fascinating whatever he talks about.

Take as an example the time taken for mortar to dry. Professor Fitchen says that this is an item of considerable importance; for on it depends the time centerings had to be kept in position. If they were kept for too short a period, the mortar would be still green when they were struck, and the ribs or vault would collapse. If they were kept too long, the ribs and the vault would be too hard to settle into a final position and would consequently crack. Centerings are altogether the crucial element of Gothic vaulting, and decentering is not its least baffling aspect. Professor Fitchen takes item by item, grappling even with the places where wedges ought to go so as to make the striking of a piece of centering even and secure. He points out for instance that, since the nave had to be kept clear and since in any case poles to reach, even with intermediate platforms, the height of the vault of Amiens or Beauvais would have been extremely costly if not impossible, scaffolding was probably erected from struts anchored in the gallery or triforium. On the struts a firm platform would have to stand, capable of supporting masons, stones and trestles. Two bays of vaulting would have to be provided for at the same time so that, while work proceeded from bay one to bay two, the centering of bay one could be dismantled on the working platform and re-erected for bay three.

For tunnel vaults, as for bridge vaults, solid centering is needed. For tunnel vaults with transverse arches or hoops, such as those of Conques or Santiago, solid centering only for one (or two) bays at a time. For rib vaults, it has always been recognized that solid centering was needed only to support the transverse arches and the ribs during erection. But how were the webs filled in? Viollet-le-Duc's answer had been the celebrated *cerce* in which we have all more or less believed, a light telescoping device of timber which is suspended from the ribs and arches and on which then one course of the web is laid. It is after that pulled out a little wider to lay the next course, and so on. Professor Fitchen explodes the *cerce* once and for all. It would have had to be pulled out to as much as 20 feet in the widest web spaces of thirteenth-century vaults, and could not possibly have held the web stones. There are also other more intricate objections. Professor Fitchen replaces the *cerce* by lagging units whose most likely shape he reconstructs, and he demonstrates that rib centerings must have been double frames; for if the lagging units or indeed the *cerce* had been placed on the rib or an upper ledge of the rib, how could it have been extracted during decentering with the first stones of the web course lying solidly on it? The double frame would hold the lagging units, the rib tops the stone. And so we go on

until we think we know all that can be known.

But no—in his last chapter Professor Fitchen, with a nice sense of drama, produces a solution which obviates much of what he himself had reconstructed so ingeniously. His solution will be known in future as the weighted-rope trick. It is not his invention. William Whewell, the unforgettable Master of Trinity College and, with (and even before) Robert Willis, the father of Gothic scholarship in England, reported it to the Royal Institution in 1831 as communicated to him by Johann Claudius Lassaulx of Coblenz (architect, incidentally, of Burg Rheinstein and Burg Rheineck; i.e. a romantic as much as a technician). The weighted-rope trick enables the mason to lay web course after web course freehand without any centering whatever. It looks convincing on paper. Would it work? And was it used in the Gothic age? To the latter there is no answer, to the former we might well get one. If American students can build Fuller Domes, why can't they, at Colgate University, Hamilton, New York, where Professor Fitchen signs his foreword, build a Chartres vault?

Nikolaus Pevsner

#### HOUSE STYLE

AN ANTHOLOGY OF HOUSES. By Monica Pidgeon and Theo Crossby. Batsford. 50s.

An anthology, to justify its name, must express a personal choice, otherwise it is not an anthology but a checklist, a survey or a text-book. If it is a real anthology, any attempt by way of preface or footnotes to explain the mode of choice will simply be *post-facto* rationalization, explaining nothing. By this standard, this is a real anthology—the introductory text clarifies the choice not one wit, except in that it refers to previous publication in the pages of *Architectural Design*, of which the co-authors are co-editors. Add the consequences of monthly journalism to those of personal choice... and press straight on to the houses, taking the introduction as read.

They are, in fact, a stimulatingly eccentric collection, mixed up of old friends—Neutra, Jacobsen, Seidler—and unknowns; some new friends, like Gunnlogsson's Japanese-style house at Rungsted (AR World, March 1960) and some fairly safe trend-spotting, epitomized by the inclusion of Kikutake's own house at Ottawa. The photographs are excellent, the plans clear, and the effect is rich and glassy—no nonsense about minimal dwellings here, these are with very few exceptions exurbanite dream houses for car-owning, appliance-using households, the very kind of building that perpetuates and worsens the urban sprawl and confusion that the authors complain of in their introduction.

What use can be made of such a book? The introduction notes that most single houses are the work of young architects on the fringes of private practice. For them it will doubtless serve as a useful crib-book, images of the good life in suitably modern architectural terms to put under the noses of vacillating clients whose minds need making up. But the introduction also addresses itself directly to potential clients, and so the book may be intended to brain-wash

them into a suitably submissive mood before they confront their trembling neophyte architect. This dual function may account for the disparity in style between the dust jacket and the binding. The former, smart as gift-wrapped whisky in a presentation box—which it strongly resembles in its use of gold ink—will surely catch the eye of even the least architectural layman in a bookshop, while the lettering on the back of the cover is so stuffy and dim that the crib-book will pass unnoticed, even by the same layman, on the architect's shelf, once the dust-jacket is off.

Hugh Wykeham

#### BURLINGTON-DEVONSHIRE DRAWINGS

ROYAL INSTITUTE OF BRITISH ARCHITECTS. SIR BANISTER FLETCHER LIBRARY DRAWINGS COLLECTION. Catalogue of the drawings of Inigo Jones, John Webb and Richard Boyle, third Earl of Burlington in the Burlington-Devonshire Collection. Compiled by Prunella Fraser and John Harris. RIBA, 1960. 5s.

The Library of the RIBA is being tested day in day out as a tool for the working architect. The working scholar also uses it regularly, although in respect of historical research it cannot compete with the Avery Library of Columbia University, New York. Its holdings are neither as rich nor as varied, and its cataloguing is sadistic. However, certain helps have been provided in the years after the war, especially the biographical summaries of Victorian architects, Scott, Bodley, Deane & Woodward, Robson and Robins, etc., compiled by Mr. Molesworth Roberts.

The collection of drawings at the RIBA is famous enough not to need being put on the map, but it is also in many ways still in need of clarification. An admirable demonstration has just been given of what ought to be done throughout: a fully annotated list of the Jones, Webb and Burlington drawings in the so-called Burlington-Devonshire collection. It is the work of two young scholars, Prunella Fraser and John Harris, the latter not a stranger to the REVIEW. It is to be followed by the catalogue of the Palladio drawings. The Fraser-Harris catalogue replaces the hand-list of 1937 compiled by the late W. Grant Keith and is in many ways superior, not only in incorporating over twenty years of intensive research, especially by Dr. Whinney and Professor Wittkower, but also in setting itself a much more ambitious aim.

Of the 146 pages nearly sixty are a chronological analysis (by John Harris) that is a summary of what the drawings have to tell the student. To render this fully serviceable, the drawings were taken out of their mounts for the versos to become visible, related drawings in other collections were widely used and mostly photographed for record purposes, engravings were looked into to detect sources, and so it became possible to reconsider 'hands' and indeed in the end to re-arrange the whole material.

Now we must hope for four things: for the relevant volume of the history of the Office of Works to appear soon, for the Chatsworth drawings to be published in a similar way, for the Worcester College drawings to be at last completely photographed and altogether made available, and for the Fraser-Harris catalogue itself

to be converted from its present mimeographed guise into a properly printed, illustrated and commercially handled book.

N.P.

#### ESSAYS ON ART

THE VISUAL ARTS TODAY. Edited by Gyorgy Kepes. Wesleyan University Press. Columbus, Ohio. \$6.00.

André Malraux's concept of a museum without walls, means in practice a hard-cover book of pictures. Here for a change is a museum of texts-out-of-context, assembled with piety but no other discernible ordering principle by a man who has elsewhere produced one of the handsomest of the Malraux-type Museums, *The New Landscape in Art and Science*. The contrast between the two books is illuminating, if rather alarming. In the *New Landscape*, he assembled, with the sure taste one would expect of a favourite pupil of Moholy-Nagy, a model set of mid-century images; in *The Visual Arts Today* he has bulldozed into one heap a miscellaneous set of papers, some seemingly scissors-and-paste jobs in themselves, many of them generalized to the point of vacuity, others (e.g. a quotation from van Gogh) difficult to reconcile with the title, and yet—in spite of this apparently free-for-all eclecticism—some gaping omissions. Thus it is pleasant to have Maya Deren, complete with Botticelli-style self-portrait, on *Cinematography: the Creative Use of Reality*, but whatever happened to Panofsky's *Style and Medium in the Motion Pictures*, a work of altogether a different order to any of the pieces on film in this book?

And yet such a wide-sweeping method will always collect some gems even while it misses others. The last section in particular, following after a sample set of images from *The New Landscape*, is full of rewards, not all of them intentional. Andreas Speiser's essay on Symmetry opens by enquiring 'Why is Mathematics so Unpopular?' And then goes on to demonstrate just why, in all too typical turgid mathematical-philosopher's English. But there immediately follows Wittkower at his authoritative best, on changing attitudes to proportion; an excellent essay on imagination in perception by Gombrich; and among others, James Ackermann on history and criticism. But the real gem of this section, and, indeed, of the whole book, the essay that will conjure it most often off the library shelves, is an article by that rare genius, James J. Gibson, whose book *The Perception of the Visual World*, is the solid base for most of the hopeful prognostications one hears about the role of perception-studies in the future of aesthetics. Here he speaks of the central subject of all his work, the difference between any conceivable picture and what a human being actually perceives of the world that picture attempts to represent, and goes on from there. This essay alone will make the book required reading.

P.R.B.

#### BOOKS RECEIVED

THE WASTE MAKERS. By Vance Packard. Longmans Press. 21s.  
THE SCOTTISH PARISH KIRK. By Ian G. Lindsay. St. Andrew Press. 16s.  
ARCHITETTURA CONTADINA DI PUGLIA. By Giorgio Simoncini. Vitali e Ghilandi, Genoa. L.2,000.  
VILLE IN ITALIA. By Roberto Alois. Ulrico Hoepli Editore Milano. L.10,000.  
ARCHITECTURE IN AMERICA. By Wayne Andrews. Thames & Hudson. 8s.



*Mr. John Piper, when he enumerates in his article below the distinguished painters who have interpreted the Venetian scene, is modest enough not to include himself. He is in fact one of those whose paintings of Venice are among their best, and who have helped us, by letting us see Venetian buildings through their eyes, to look at them more perceptively. Opposite, reproduced in reverse, is a recent drawing by Piper of the facade of the church of S. Stae*

John Piper

## SERENISSIMA

Venice appears to be indestructible, visually. Sketchers for hundreds of years have been trying to drain her dry of good looks, leering at every presentable feature, soaking up every trace of interest and beauty, slopping on the Venetian red, scratching away with the Indian ink, getting too much ultramarine into the sky, putting too many charcoal swirls to represent gondolas among the foreground washes. And as if the amateurs at every corner were not enervating enough, the professionals have kept at it full-time too, giving a new slant to the vision that each generation has soon learned to treat as its own. A city is as bold as brass that can outstare, within a hundred and fifty years, the searching glances of Turner, Bonington, Renoir, Boudin, Sargent, Monet, Manet, Whistler, Sickert, Kokoschka, Dufy, Masson and Sutherland. After a shower of rain in the hot and smelly season everything comes up clean-washed, and every early summer morning while the thousands of tourists are still asleep in their beds, and most of yesterday's paper and orange peel has sunk or drifted out to the lagoon, there it all is again, as fresh as if nobody had ever looked at it: St. Mark's sparkling like a million jewels in a new seam of an Istrian quarry, the whorls on the Salute as crisp and white as if they were cut yesterday, ready to outshine everything and everyone, ready even to withstand the cameras that any minute will begin clicking away again like crickets on every hand.

Some of the attraction is the sheer vivaciousness of it, rather than that all the features are first class, as people who are searching for something critical to say never tire of saying.

Venice's latest and one of her best observers, Mr. James Morris\* says—I think unjustly, though he is not often unjust—that if you set down the Dogana in Clapham or the Bronx it would look undistinguished. But the point he is making is that the allure of Venice is in fact distinct from art and architecture. 'There is something curiously sensual about it, if not actually sexual. "Venice casts about you,"' as a nineteenth-century Frenchman put it, "a charm as tender as the charm of woman. Other cities have admirers. Venice alone has lovers." It is also a knot that ties East to West. A lot of eastern light and influence has spilled up the Adriatic, giving other romantic European cities a native, homely cast by comparison. With such gifts from God and such fawning from men the wonder is that she has been able to keep herself splendid for so long.

But the city has been extraordinarily clever. Whenever in any kind of danger, even in defeat after centuries of self-indulgence, she has never done anything silly enough to lead to self-destruction and has always found an ingenious answer, to conquerors as well as conquered. Brave Venetians stole the body of St. Mark in the ninth century, 'probably under State orders,' says Mr. Morris, because a powerful talisman of independence was needed. And from that day Venetians have never lacked pride, or the sense of being different and apart, and 'better': they can be intolerably patronizing on occasions, to this day. They remain islanders, in spite of the causeway and the barbarian visitors from every land, on whom they fatten. Venice is, as she always has been, dedicated to money-making, to profit; 'even treating the Holy Wars as promising investments, and cheerfully accommodating the Emperor Baldwin of Jerusalem when he wished to pawn his Crown of Thorns. . . . Even when, in the seventeenth and eighteenth centuries, she stood almost alone for Christendom against the triumphant Turks, Venice was never embraced by the Nations. She was like a griffin or a phoenix, on the outside of a rookery.'

So that in the present predicament—whether to develop or to mummify—it is most unlikely that she will take any lessons from the rest of the world. The preservationists and the developers are both powerful, and apparently well matched. Both of them have had enough of their own way to encourage them to go on fighting.

In fact, Venice is not yet simply a museum to be gaped at, though one may well think otherwise on a fine summer day; nor is the city outwardly or obviously industrialized, in spite of giant cranes, shipping—a great enhancement of many views—and grand banks and warehouses. A lot of commerce has moved to Mestre on the mainland, but the port of the city itself is still of consequence, being handy, compared with most in Europe, for oil terminals (though Mestre handles six out of the eight million odd tons of oil annually dealt with). And while the place remains the burgeoning gaggle of souls in a maze of canals and footways that Carpaccio painted, the future happiness, even existence, of it depends on the two schools of thought holding some sensible balance. The complete commercial centre and the total museum are unthinkable.

Both schools are agreed that Venice must not die a crumbling monument. The developers think that the only way ahead is to destroy her watery isolation; they point out that the population is declining and will continue to decline, and they think that cars ought to be taken into the city, and allowed at least some manoeuvring space; that there ought to be some more paving of canals, opening up of new industries in the city and on the islands, and construction of approach roads and bridges—and let the Devil take the tourists if they don't like it, and, roughly speaking, let Venice become any old town in Italy, so long as business prospers.

The preservationists believe that she must keep her beauty intact, restoring where necessary, encourage the civilized life of art and scholarship, including the Biennale, the Film Festival and the Music Festival, because they, and the tourists, are money-making necessities. They would prevent any addition, alteration, vulgarization or exploitation by big business, any more paving of canals (already prohibited by local law) and any considerable opening up of industry on the islands. The modern city, they believe, should be developed at Mestre, for which Venice could be partly a dormitory, and some old industries, such as shipbuilding at the Arsenale, should be revived. There should not be huge link roads over the bridges on to the Lido and the small market-garden islands, and those wanting new and better opportunities to bathe should be given new and better Vaporetto services.

A careful reading of a recent pamphlet expounding these ideas† (although it contains discouraging sentences, such as 'in the preservation of Venice's unique local characteristics, historic and ancient buildings must have absolute priority over any innovation or modification made to the town') shows that these people have a grasp of practical problems, and some of their proposals, though undramatic, are sensitive and realistic. For instance, they oppose the cutting of a 15-metre breach in the Grand Canal to widen the entrance to it of the Rio di Noale. Those who laugh at them would say that they just want to preserve one pretty house with a garden and a pseudo-Gothic palazzo. But, in fact, the cut would only be a temporary solution to the traffic problem and would destroy the consistency of the narrow, poetic secrecy of such entrances.

It is these people, too, who have suggested the re-

\* *Venice*. By James Morris. Faber & Faber. 30s.

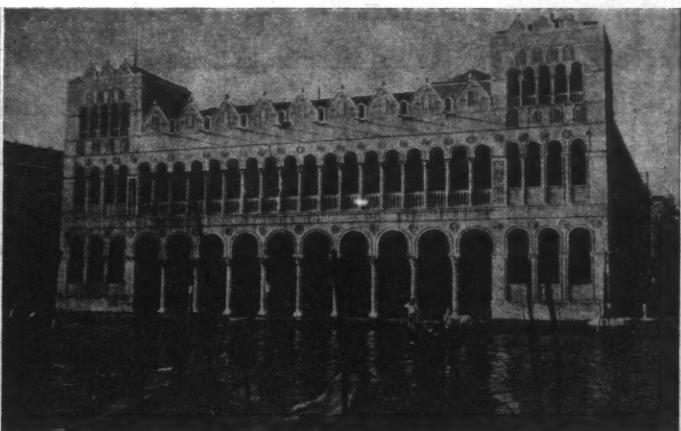
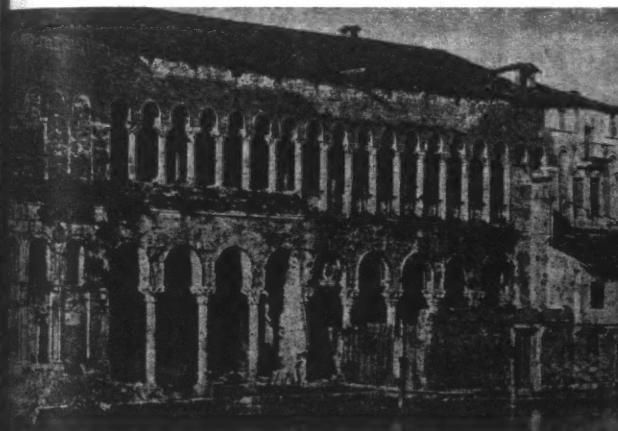
† 'Italia Nostra' difende Venezia. Associazione 'Italia Nostra'. Rome.

opening of the Canale della Galeazze, entailing a narrow cut in the Arsenale wall, for which permission has already been obtained, and which would create a route from Murano to St. Mark's that is a kilometre shorter than the way through the Rio di Noale. In such matters their love has made them clear-sighted. When this is done, as it probably will be, the Castello district, that strange waste of pavements, tenements and washing that lies between the east side of the S. Marco district and the Public Gardens and the Biennale, will be incorporated into the life of the city, and will come in for 'improvements.' But what will those improvements look like? There the trouble begins.

Look at the Palazzo dei Turchi: a 'preserver's' restoration. It utterly destroyed the soul of the building, formerly one of the most beautiful on the Grand Canal. It would have been far better to pull it down altogether. It was done some years ago, but the historical dead-handedness of this deed is still with us;

buildings, or to fight for a railway station of distinction, instead of tolerating the 'modernish' lumps they got? Venice more than most places is a city of the world, and they should be aware of how they are eyed continuously, and to some extent informedly, from outside.

Le Corbusier said the city was an object lesson for town-planners. A Venetian architect, Renata Trincanato,\* has developed the reasons, or some of the reasons, why it is so. She illustrates in photographs and beautiful elevational line drawings the buildings (in two *sestieri*) outside the guide-books, the un-grand buildings, since they exhibit the basic, down-to-earth types of water-approached and water-dominated house from which she draws her moral of Venice as a true begetter of functionalism. She should be translated, since she is obviously 'essential reading' for interested parties. So is Mr. Morris, since he loves Venice as a working place as well as a holiday place, and is an intense observer with an acute eye, influenced by



How not to restore  
Venetian building:  
the Fondaco dei  
Turchi—left, before  
restoration; right,  
after.

the attitude asserts itself every time anything has to be done to stop an old building from falling into a canal; an attitude that is really only happy with replicas, and was especially affronted by the suggestion of a Frank Lloyd Wright building on an important site.

That on the one hand; on the other, the businessman showing his hand in the uncomfortable, windblown desert of the Piazzale Roma, in the hideous blocks of modern flats he has been allowed to squeeze in, the sordid new warehouses, the shoddiness and lack of taste, the evidence of irresponsibility and greed, which have been more than enough to harden the hearts and set the faces of the conservative scholars.

The people in Venice who really mind about what things look like must forget the businessman for a moment and broaden their sensitivity in a creative way, accept sound counsel on contemporary architecture when they lack inspiration, and not give all their attention to details of restoration and canal openings (all of them essential, for it is fatal to lose a trick; but they should be done incidentally). Why did it not occur to them to ask Nervi to design the Biennale

Ruskin, like all sensible people in Venice. 'Once it was vivid with gilded façades and frescoes—the Doge's Palace used to glow with gold, vermillion and blue; . . . It is partly a matter of texture. Venice is a place of voluptuous materials, her buildings inlaid with marbles and porphyries, cipollino, verd-antico, jasper, marmo greco, polished granites and alabaster. . . . The Venetian allure is partly a matter of movement. There are several places . . . where, looking across a canal, you may catch a momentary glimpse of people as they pass the openings in an arcade: their movement seems oddly smooth and effortless.' Which reminds one distantly, too, of Adrian Stokes's magnificent descriptions of architecture in relation to water, and seen in apparent movement from water.† He, in fact, was the first prophet of many now well-known ideas about Venetian art and architecture. His book is surprisingly—even disgracefully—out of print, but the serious visitor is advised to take both Ruskin and Stokes with him, out of the library, as well as Morris from the nearest bookstall.

\* *Venezia Minore*. Egle Renata Trincanato. Milan 1948.

† *Venice*. By Adrian Stokes. Faber & Faber. 1945.

which is to provide the maximum amount of individual freedom and personal autonomy and to encourage the individual to live a free and independent life. The buildings will be built in such a way that they will be easily accessible to the patients and will be designed to meet their individual needs and requirements.

## PSYCHIATRIC INSTITUTE IN MILAN

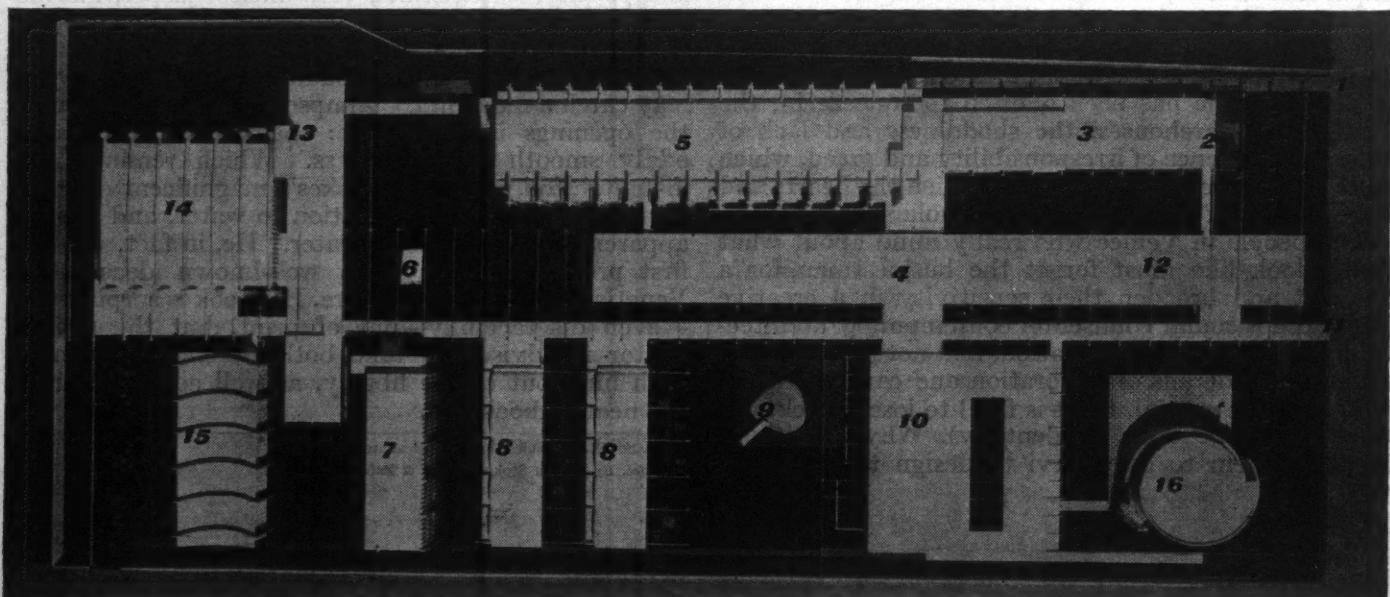
**ARCHITECT** | **VITTORIANO VIGANO**

The term 'Brutalist' has been applied to only two Italian architects, Leonardo Ricci and Vittoriano Viganò. In the first case it is a loose usage applied casually to Ricci's structure-cluttered interiors and almost cyclopean random-masonry walling, in default of some more accurate term, but in the case of Viganò it was applied to his Istituto Marchiondi by Bruno Zevi with full justificatory argument and definitions.

Zevi's justifications were substantial; an examination of the illustrations of the Istituto Marchiondi that appear on the following pages show that it stands fairly close to the canonical definitions of Brutalism advanced by Reyner Banham (AR, December 1955). Some, at least, of its constituent buildings exhibit 'memorability as an image' (notably, the bathrooms elevation of the dormitory); the use of external concrete framing constitutes 'clear exhibition of structure' and the general employment of exposed concrete for most of the surfaces of the buildings bears witness to 'valuation of materials as found.'

But Viganò did not set out to design a Brutalist building. His aim, by his own testimony, was to provide a solution to an extremely difficult and responsible functional programme; his success is to have improved the programme in the process of serving the required functions, and to have provided better buildings than were indicated in his original brief. If the result has turned out Brutalist it is because of a community of aims between Viganò and the Brutalists, more than any similarity of means. It could probably be equally well defined as Functionalist or Futurist, and flatter either category, simply because it displays—in common with all good modern architecture—a radical appraisal of function, realized in suitably radical forms.

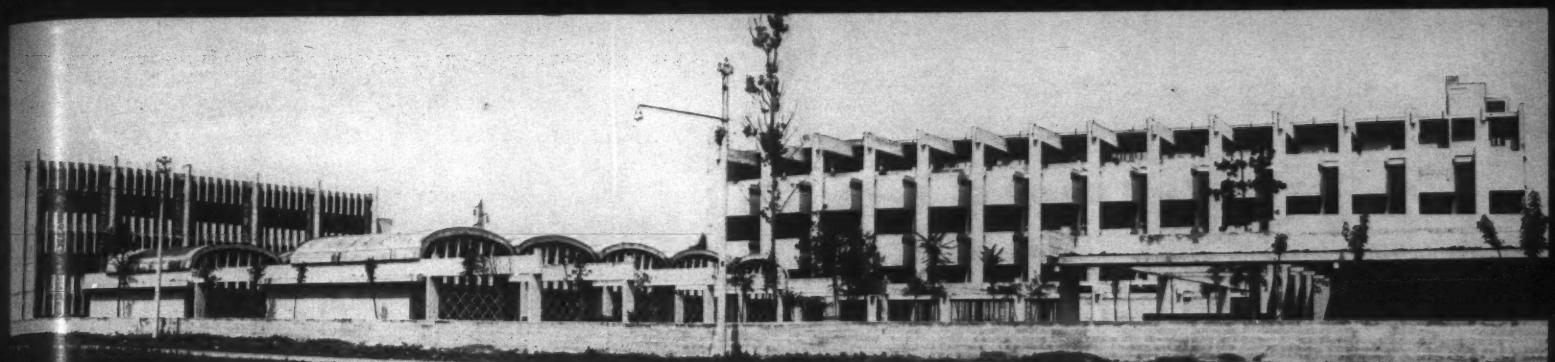
site plan: 1, service entrance; 2, greenhouse; 3, general services; 4, hall and common day room; 5, dormitory block and infirmary; 6, open-air living-room; 7, classroom block (secondary); 8, classroom blocks (elementary); 9, play pool; 10, teachers' cloister and psychiatric block; 11, main entrance; 12, offices, etc.; 13, activities block; 14, gymnasium; 15, workshop; 16, chapel (13-16 have not yet been built)





1

2

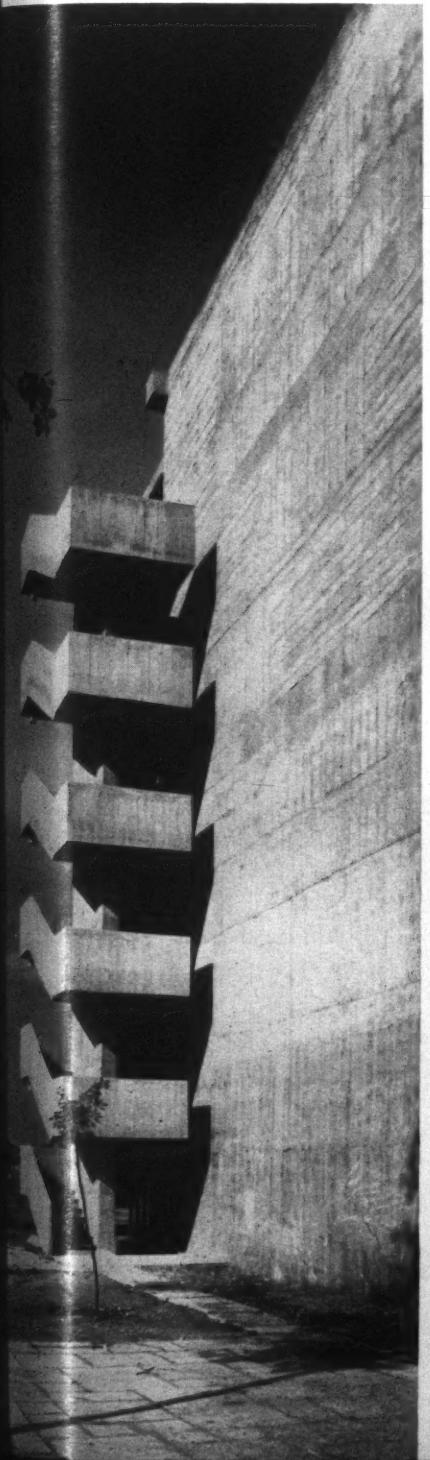


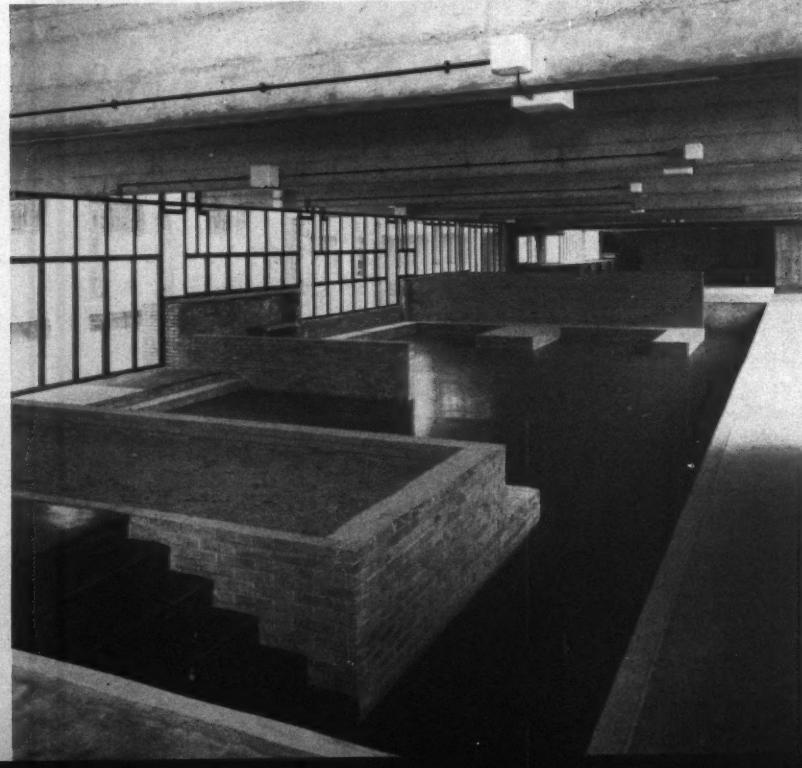
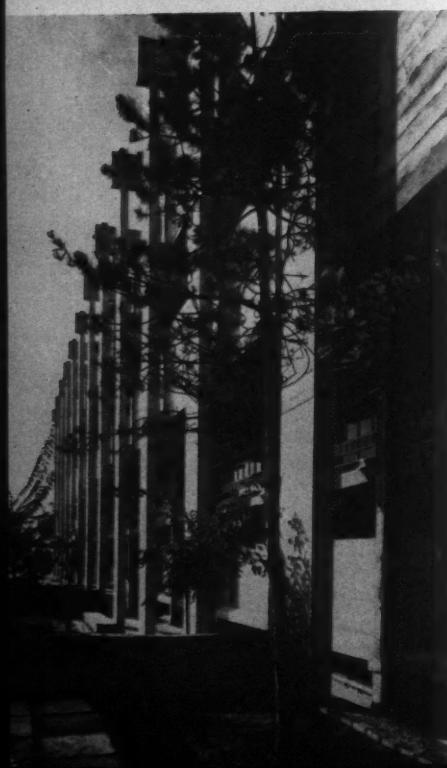
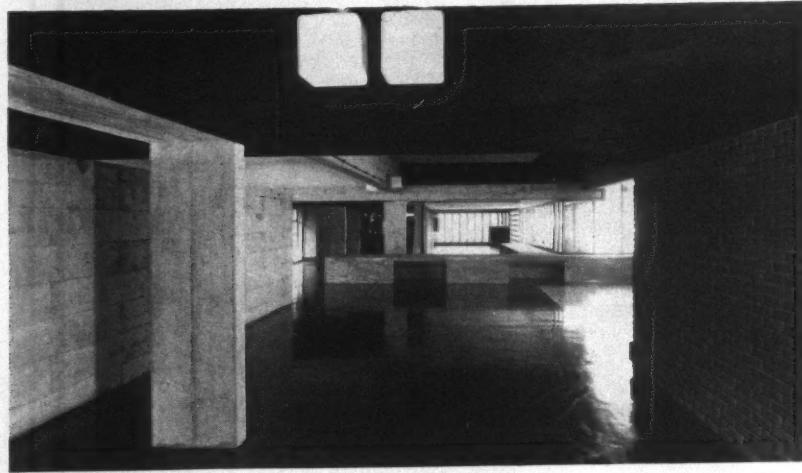
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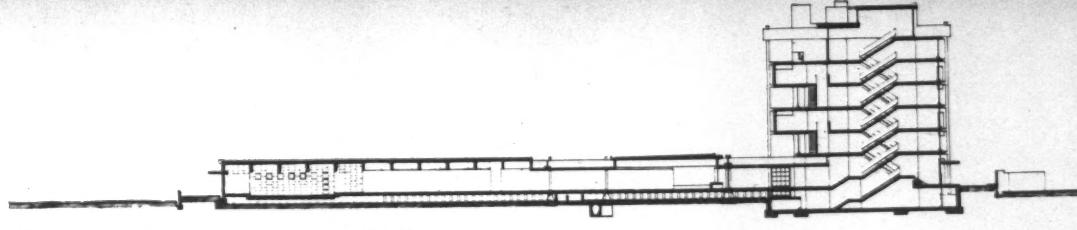
1, from the south-east; left are the classroom blocks, right is the dormitory block.  
2, staircase at west end of the dormitory block.  
3, close up of south elevation of the dormitory block.

2

3







cross section through psychiatric block, entrance hall and dormitory block

The Istituto Marchiondi is a secular organisation for the care and cure of psychologically maladjusted boys and youths. It has existed in Milan since the middle of the nineteenth century, and has made a valued contribution to the life of the city—among its alumni was the celebrated Milanese painter, Giovanni Segantini. Until the beginning of 1959 it was housed in barrack-like buildings in a central area of Milan—the site lies opposite the present residence of the architect of the new structure. The buildings and the site had become obsolete, both physically and in terms of the psychiatric programme



10

conducted in the Institute, but the site had also become sufficiently valuable to finance the move to a new location at Baggio, on the extreme western outskirts of Milan, and to cover in part the cost of erecting new buildings there.

These new buildings are not only a physical replacement of the old, but are also designed around a reformed programme of teaching and cure, and the architect collaborated with the Institute's Governors and staff in working out a revised distribution of interior and exterior spaces adapted to the new programme, and intended to render more humane the relationship of boys to staff while reducing the psychological pressure on the staff themselves.

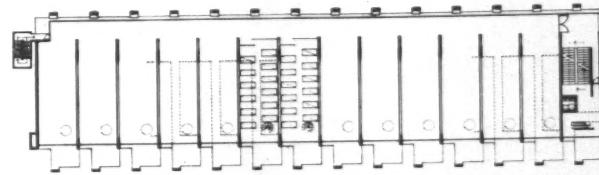
The accommodation provided in the new buildings (not all of which have yet been built) includes—or will include—entrance and school-keeper's facilities, together with the offices necessary for running an Institute of this kind; classroom blocks for elementary and some secondary education; a small 'cloister' of study-bedrooms for the staff with adjoining psychiatric consulting rooms, including some for group work; a large hall and common living-room, and a block of dormitory accommodation. A future church in one corner of the site and a gymnasium are also included in the project.

The construction is of exposed reinforced concrete throughout. This is normally of the post-and-beam type, much of the structure being revealed on the exterior of the blocks. The classrooms for elementary instruction, however, are roofed with concrete vaults resting on long horizontal beams, and a similar beamed construction is continued on the module of the living-room block (though unroofed) to give architectural order to the area of paving and grass which is to be used as an exterior living-space. Internally, plasterwork covering

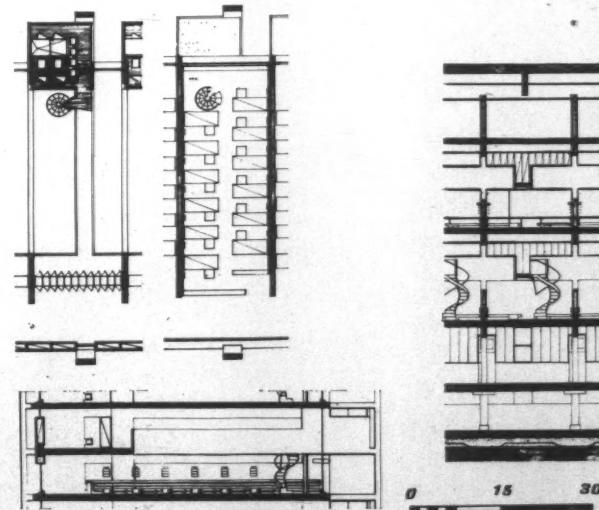
infill materials is normally painted in strong colours, selected to enhance the psychological effect of the rooms.

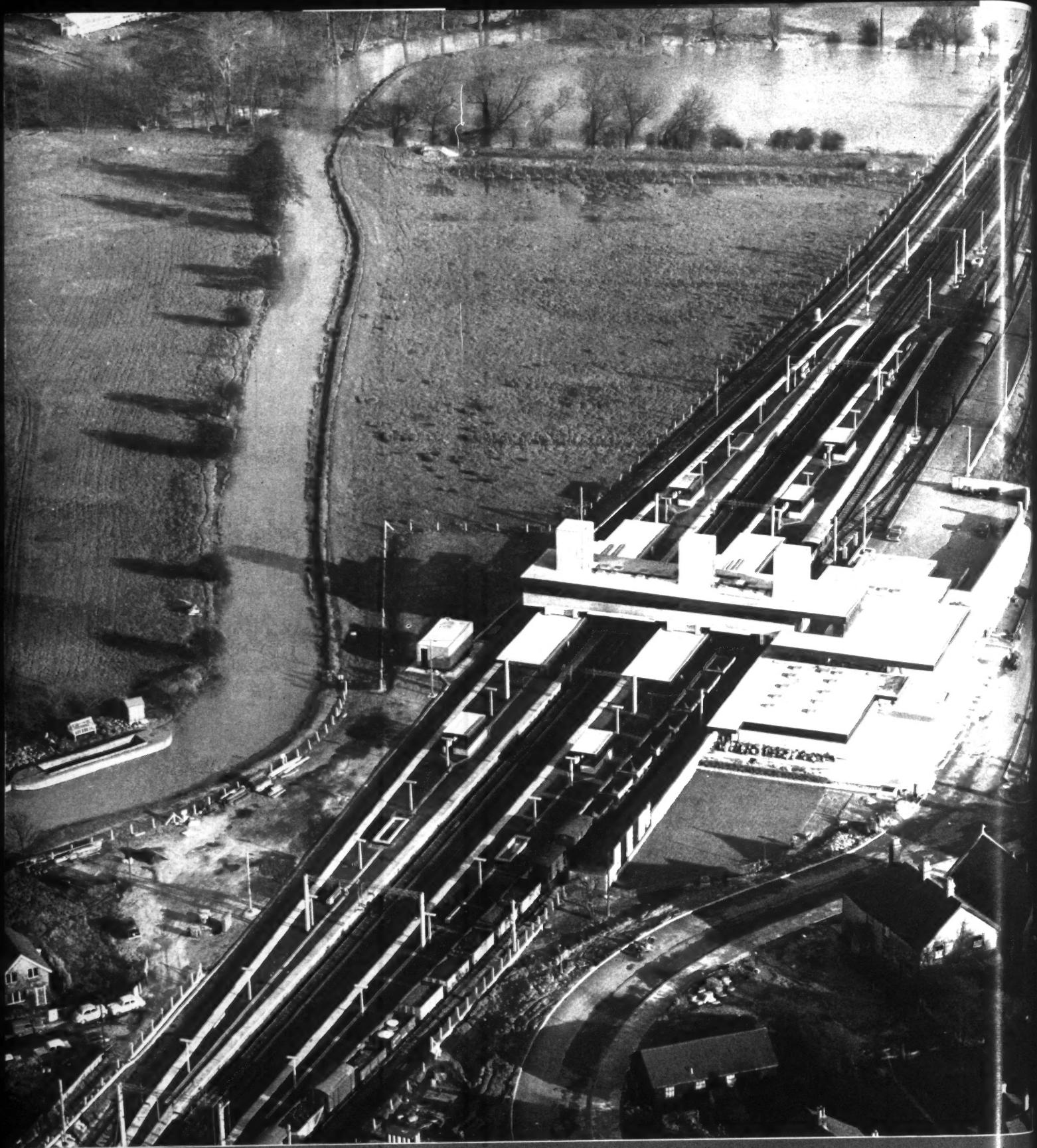
The dormitory block is marked by an original type of double-height sleeping spaces which have been used in order to give the necessary volume of air required by the building bye-laws without creating an unduly wide open expanse of floor. Twelve boys sleep in each bay of the dormitory and ascend by a spiral staircase to bathroom and toilet facilities at the upper level. From this point a concrete bridge extends to the opposite end of the bay through the upper space to give access to clothes-cupboards without the boys having to become involved with the circulation of the Institute's servants: the cupboards are double-sided with servants' access on one side, and the boys' on the other. Separate circulations to the boys' and servants' levels are provided by a 'two-start' wooden staircase, with a supervisor's desk in the open stair-well. Thus, at night it is possible for one member of the staff to take care of all 300 boys, instead of a master having to sleep in every dormitory room as was the arrangement in the older buildings.

The new psychiatric programme of the school is based on concepts of free and active teaching, and the devolution of as much responsibility as possible to the boys themselves. Thus, in the dormitories every boy has a locker with a key which is his own responsibility, and the hall-living-room has been laid out in such a way as to provide a variety of interior spaces in which the boys can freely associate in spontaneous groups—a complete contrast to the rigid discipline of the older system and the older buildings.



Above, plan of typical floor of dormitory block. Below, enlarged plans of one bay of the same block showing the two levels, with bathrooms on the upper level reached by spiral stairs. Bottom, longitudinal section. Right, transverse section.





Harlow New Town station, seen from the air (above), is the first and most convincing fulfilment of the promise of better railway architecture in Britain. Yet the achievement is precarious: the picture itself emphasizes that buildings must follow on trackwork, and cannot be part of an independent programme. But a worse insecurity threatens British Railways—while Harlow was being completed by Eastern Region, Midland Region's electrification programme, with its attendant architectural works, was interrupted by a Ministerial order, and shortly after Harlow was finished, the Stedford Committee had recommended yet another revision of the administrative structure of British Railways. Such difficulties, as well as the whole problem of creating good architecture in a bureaucratic system that makes it difficult for the essential design decisions to be taken at the right time or by the right people, are discussed in the article opposite. Some of the architectural successes that have been achieved in spite of these difficulties are illustrated on pages 318-320.

# RAILWAYS AND REGIONS

## ARCHITECTURAL PROBLEMS UNDER NATIONALIZATION

Some two years ago, regular commuters from Bromley South station—an unheroic monument to the heroic age of suburban steam—were treated to the unedifying spectacle of an obsolete and apparently unsound waiting room structure on the down platform being taken down brick by brick, while its sanitary, lighting and other services were carefully propped up in their positions, and then the whole thing rebuilt, brick-for-brick exactly as it was before, with most of its original wood-work. The result; a sound but obsolete waiting room, good for another century of increasingly inadequate service. Whoever was responsible for this meticulous exercise in maintaining the *status quo ante electrificationem*, the characteristics of the operation—failure to capitalize an opportunity, failure to co-ordinate with other activities (track modernization had over-run what started out as a simple rehabilitation of an existing structure)—are only too typical of what has been happening in British Railways architecture since well before nationalization.

Against this one may set on the credit side the devoted efforts of those who—also in the same months, but in a different Region—produced Harlow New Town station, a model of intelligent opportunism by men who had prepared themselves by research for such an opportunity, and co-ordinated their efforts with other branches so as to ward off architectural disasters brought about by the activities of, say, electrical and mechanical engineers. One knows only too well which of these opposing trends is more typical of

British Railways' six regions, but what are the chances of better counsels and better architecture prevailing, if and when the Stedeford Committee's recommendations are put into effect?

To answer this question it is necessary to examine the situation as it exists in so far as it affects the design of buildings. Firstly, there is no one person with whom responsibility rests—the hierarchy of command in architecture resembles a six-sided pyramid whose point is isolated from its main bulk by a layer of foreign matter and a total vacuum. The total vacuum represents a complete break—regional architects are not responsible to the Architect to the Transport Commission, nor has he any control over them, or their appointment. But the chain of command does not even reach up as far as this gap; the layer of foreign matter represents the fact that architects are not chief officers within the regions, but are included within the departments of the Chief Civil Engineers, who in turn are responsible to the Region's General Managers.

In other words, the regional architects are not masters in their own houses, while those houses are—apparently ever shall be—isolated from one another by local sentiment bordering on sentimentality, reinforced by political determination that the regions shall be as regional, even provincial, as possible. Whatever complaints may have been made by interested parties about 'creeping centralization' since the decentralizing Act of 1953, British Railways has never had any discernible over-all design policy. The recently

appointed Design Advisory Panel, which is concerned with items of small static equipment, is only advisory; the Code of Practice for stations that has been under study at Transport Commission level with the Civic Trust is in its infancy; the Architects' Study Group, an inter-regional body, has met only spasmodically, and has no powers.

Still, this regionalism does not, in itself, necessarily preclude the appearance of six different worthwhile styles on the six regions, or even of a single style charismatically inspired by some dominant personality. But there can be no doubt that the second-rate position of architects in the regional hierarchy makes such a lucky outcome extremely unlikely. Within the office of a region's Chief Civil Engineer, the Architect is not even second in command, but has only equal standing with five other section leaders (New Works, Permanent Way, Bridges, Maintenance, Staffing). Now, in so far as these section leaders are concerned with the design of permanent objects, they design them within the same mental disciplines and methods as the CCE—they are all engineers—and in conferences involving other departments the CCE can interpret the briefing they have given him with trained sympathy and intuitive insight. But only in the rarest of cases can he do so for his architect: with the best will in the world, an engineer cannot safely step outside the brief given him by the architect, while the architect, not being personally present at such meetings, cannot hope to forewarn his engineer of every possible circumstance affecting the architectural aspects of whatever works are being contemplated. The result, inevitably, is a serious risk that the architect's work will be prejudiced by policy decisions made in his absence long before the theodolite has been set on site, let alone pencil to paper. The case made for architecture at this normally crucial level of planning cannot be more effective than the brief given to the CCE, and the only exception to this rule at present is in London Transport where the architect, K. J. Seymour, is of equal standing with the CCE and independent of him—a situation that seems likely to survive any Stedeford reforms, since these will, if anything, increase the independence of London Transport.

Unfortunately, this general submission of the architect to the engineer is no more than a realistic appraisal of a situation that exists in physical and administrative fact—building-work follows after track-work. Within limits this makes sense: the permanent way is the basic and irreplaceable foundation on which railway operation rests, and everything else is epiphenomenal. Although isolated instances to the contrary can be cited, particularly in the field of buildings for staff welfare, the initiation of building programmes, and even the siting of what is built, lies predominantly with the track engineers. Though the creation of entirely new railways grows less likely every day (except possibly within the LT area) local programmes of track improvement trigger small building programmes (such as that at Bromley mentioned at the beginning of this article) and major programmes of modernization—such as the Crewe-Manchester electrification—trigger off extensive programmes of building covering a large part of a Region.

Though this last observation may appear plati-

tudinous, it provides yet another insight into the difficulties of the railway architect. Where work is spasmodic, and small in scale, it is difficult for a regional architect to plan ahead, accumulate experience or build up *esprit de corps* in his staff. A Region in this condition will often funk a moderate-sized challenge and call in an outside architect, or even leave building design to a package deal with the contractor. But where any kind of extended programme of work can be foreseen, the situation changes—if the regional architect is sharp enough to seize the opportunity. The recent modernization programme has provided the first opportunity of this sort since nationalization, and it is no accident that the best recent railway architecture has been done in the most modernized regions—Eastern with its massive programme of London suburban electrification; Midland with its still uncompleted main-line electrification London-Crewe-Manchester. Here it has been possible to build up first-class teams, under W. R. Headley on the Midland, H. H. Powell on the Eastern Region, and to institute long-range design and development programmes which have been able, at last, to resume where Sir Leslie Martin's pre-nationalization studies in station structures (for the old LMS) left off, though changed circumstances have made it impossible to resume that work in detail.

Eastern, in fact, have done excellent research work in ticket office design and equipment, signal boxes, and line-side structures in plastics for various electrical plant. But the kind of long-term programme that makes this kind of basic and necessary research possible is exposed to another risk, that does not originate inside the regional hierarchy. Any major programme of modernization, under conceivable circumstances and Stedeford reforms notwithstanding, will depend on an intake of public monies and thus be liable to political intervention. No Region so far has enjoyed the feeling of long-term stability that has made the MoE schools research programme possible, and Midland's London-Crewe electrification programme was subject to a Ministerial ban for most of the second half of 1960, just when the architects and other departments were braced and ready to go ahead on a major programme of work. If the Minister keeps his powers to call in and veto any schemes involving an outlay of over £250,000 under the new regime, then political interference looks like becoming not only chronic, but detailed, and individual parts of programmes may be arbitrarily lopped off. However one views the prospect, stability in research and continuity of design programme are unlikely to come the railway architect's way in the foreseeable future.

The obvious remedy for this situation would be to vest research in a central body, but this has not been possible under the existing regime, partly because of the isolation of the Commission's architect (currently F. F. C. Curtis) from the regional architects, and partly because his responsibilities are too diffuse—railway architecture is the predominant part of the building for which the Commission is at present ultimately responsible, but the Commission's own architect is involved with untypical and unrepeatable problems (hotels, ship interiors, centralized laboratory facilities, terminal station development schemes) that involve

him in as piecemeal and spasmodic—albeit on a grander scale—practice as the architect to a relatively inactive Region. Against this, it should be pointed out that even a relatively dormant region will have a fairly continuous programme of station renovations (which don't, of course, promote much sustained research) and new work on staff welfare buildings such as hostels and canteens, but these last don't seem to have promoted as much continuing research as might be expected.

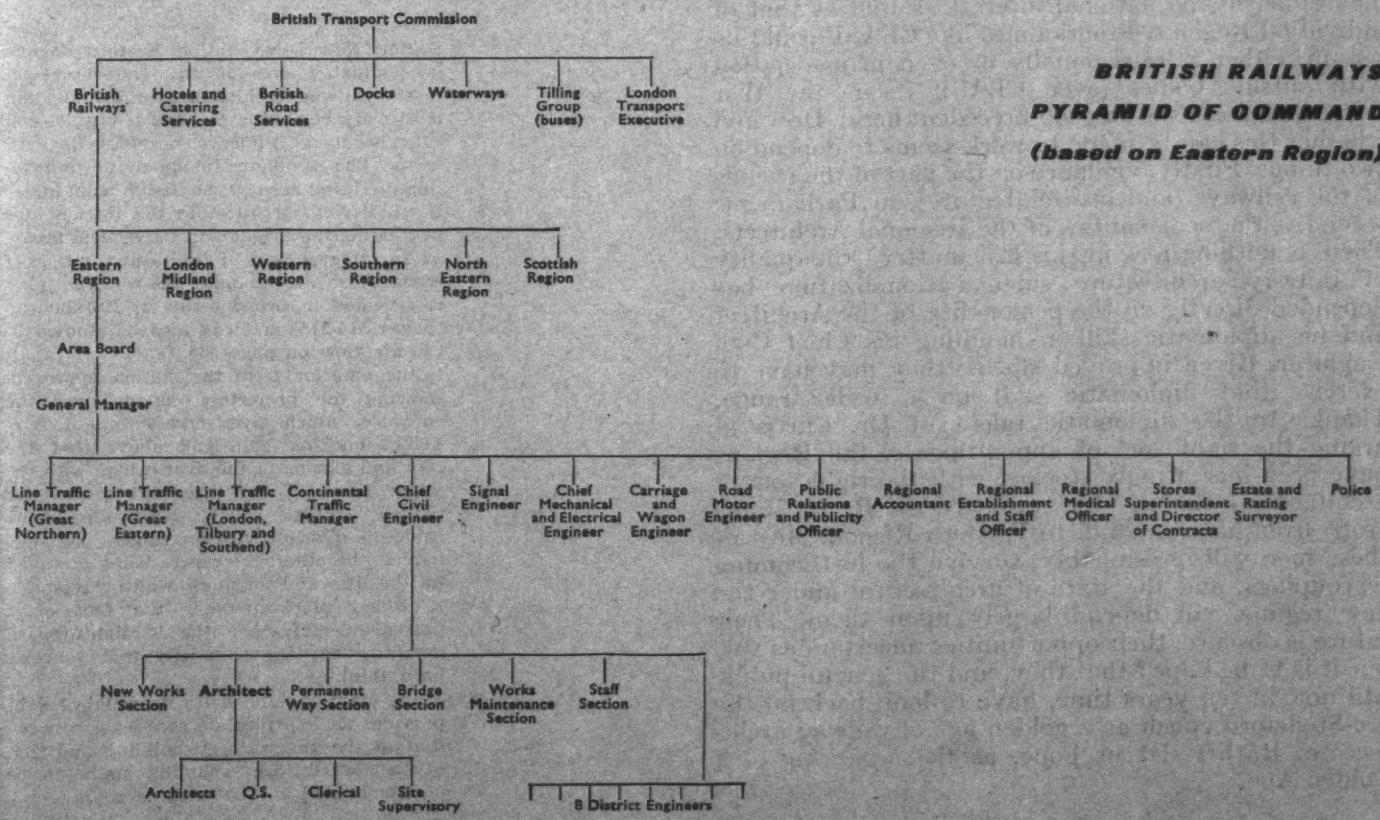
Research appears to be the crux of the problem: there is a serious risk of work done by one Region going unheeded by the others. The Architects' Study Group was formed to prevent this happening, and to ensure that ideas and information, work in progress and observed results, should be pooled. But, except by moral persuasion, there is no obligation on one region to heed the research of another. Yet it is quite clear that most types of railway building are in need of radical revision at all levels, including the functional. Most of them were crystallized by ad-hoc compromise (occasionally brilliantly, no doubt) between unknown needs and irrelevant architectonic elements in the middle of the last century. Research has shown that at least two building types that are slightly *younger* than most railway buildings—that is, the hospital and the school—were in urgent need of radical revision at the end of the War, and applied research, directed by architects, has brought both to the forefront of contemporary architectural achievement. In spite of the beginnings made by Eastern and Midland Regions, the basic functional and structural problems of railway architecture have hardly been

touched. The promise of these beginnings is impressive, to say the least, but it will remain unfulfilled until research can be got off its present spasmodic, disconnected basis, dependent on the initiative of individuals, rather than of the railway system at large.

The conditions that make for better research will almost certainly make for better architecture generally. But are those conditions likely to exist under the regime envisaged by the Stedeford Committee and the Government's White Paper?

Since it is intended that the Transport Commission as such shall disappear, and be replaced—as far as the six railway regions are concerned—by a Railway Board, it is quite possible that the present Architect to the Commission (or his successors) may become, say, Chief Railway Architect, with rather less diffuse responsibilities than at present and—perhaps—standing in a closer relationship to his Regional Architects. But this closer relationship will not be close enough unless the Regional Architects are up-graded to chief officers, and given some direct link to their ultimate superior.

But this last appears extremely unlikely to happen, given the way the Stedeford proposals are loaded. The emphasis is on regionalization, not centralization, to an even more marked degree than in the 1958 Act. The chances of creating any form of centralized design or research agency appear to be very slight indeed, since it would constitute an infringement of the apparently sacred principle of regional autonomy, and it appears more likely that the present pyramid of command will be split into six completely unrelated



structures. If this will, indeed, be the ultimate state of affairs, then better architecture depends even more certainly on the up-grading of Regional Architects to Chief Officer status. It is not simply a question of status in inter-departmental bargaining, it is also a matter of the present system being too uncertain and wasteful of architectural effort—as witness the present demarcation disputes between engineers and architects as to who should design what, with the architects fighting to retain—or regain—a foothold in fields of design that would be theirs by simple professional qualification.

This revision of the architects' status would be a considerable step forward, but the problem of research would remain. Presumably the Architects' Study Group will, or can, remain in being and, if so, it could form the nucleus of an information centre, if nothing more. But it will have to be *something* more if there is to be real progress, and if the backward regions are to be brought up to the standard of the best. There is no visible reason why the various regions should not specialize, according to their needs and opportunities. Apparently somnolent areas, with no gigantic modernization programmes on their hands, might well develop special skills in the restoration and adaptation of elderly stations to modern conditions, skills that they could make available to bustling Regions too busy for architectural geriatrics. Unlike Bromley South, some old stations are ancient monuments, or parts of carefully designed Picturesque landscape schemes—their care should not devolve entirely on amateur enthusiasts like the Bluebell Railway Company.

It is quite possible that political extremists will denounce such collaborative efforts as 'creeping centralization,' but some such method of working seems inevitable, in the national interest as well as that of individual Regions. Programmes like CLASP could be set up, either inter-regionally or even in association with outside bodies (even CLASP itself—the War Office has established a good precedent here). How and whether this can be made to work seems to depend on two things. Firstly, vigilance on the part of the friends of the railways (and of architecture), in Parliament; secondly, the personalities of the Regional Architects. There is nothing new in this last matter—the quality of railway architecture since nationalization has depended directly on the personality of the Architect and his diplomatic skill in handling his Chief Civil Engineer. Given improved status, they may have to exercise that diplomatic skill on a wider range. Thanks to the diplomatic talent of Dr. Curtis in urging the right sort of appointments, the Regions have been increasingly stocked with the right sort of architectural timber—the most recent: R. L. Moorcroft, from his own staff, to Western Region. Most of these men will, presumably, survive the forthcoming regroupings, and the state of architecture under the new regime will depend largely upon them. Their future is obscure, their opportunities uncertain as yet, but it is to be hoped that they, and the general public will not, in ten years time, have to look back on the pre-Stedford epoch as a golden age of railway architecture. Rather, let us hope, as the beginning of a Golden Age.

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On the next eight pages are illustrated and described a selection of the best, or most promising, buildings designed by architects in the Civil Engineers' departments of the six British Railways regions. The preponderance of Midland and Eastern Regions does not necessarily indicate anything more than that their opportunities have so far been greater than those of other regions. Nevertheless, it will be clear that the architecture is only variably equal to the opportunity, and that some Regional Architects have established a more effective and stimulating relationship with their Chief Civil Engineers. The work illustrated is produced by a variety of architectural techniques, from the traditionally paternalistic, where the chief architect pulls a stool up to the assistant's drawing board and discusses the bonding of the bricks, to the most experimentally technological, with development groups making field trips through the plastics industry in search of the right sound-transmitting membrane for a ticket-office window. Finally, it must be said that the types of building represented here do not exhaust the possibilities of railway architecture, which has to shelter a wider variety of functional needs than in any other industry.

Harlow New Town station, Eastern Region, is justifiably one of the showpieces of recent railway architecture in Britain, and is already beginning to have a visible, and often beneficial, influence on other Regions' work. The fundamental planning innovation produced here by the design team under H. H. Powell, architect to the Region, lies in treating the bridge and its vertical access as an integral part of the design, not as a nuisance or afterthought. The resultant plan is repeated in broad terms at Broxbourne (pages 314-315) and can also be studied in the air view on page 308.

1, the exterior from the station approach, showing the projecting canopy over the entrance, which gives access to a double-height booking hall, and above that the roof and glazing of the over-bridge with the upper parts of the three lift towers for parcels trucks. As at Broxbourne, the bridge is divided, with passengers one side, parcels the other, the centre being occupied by the lifts and ancillary waiting rooms.

2, island platform near the foot of a passenger stairway; the straightforward detailing has the simplicity that conceals hard thinking.

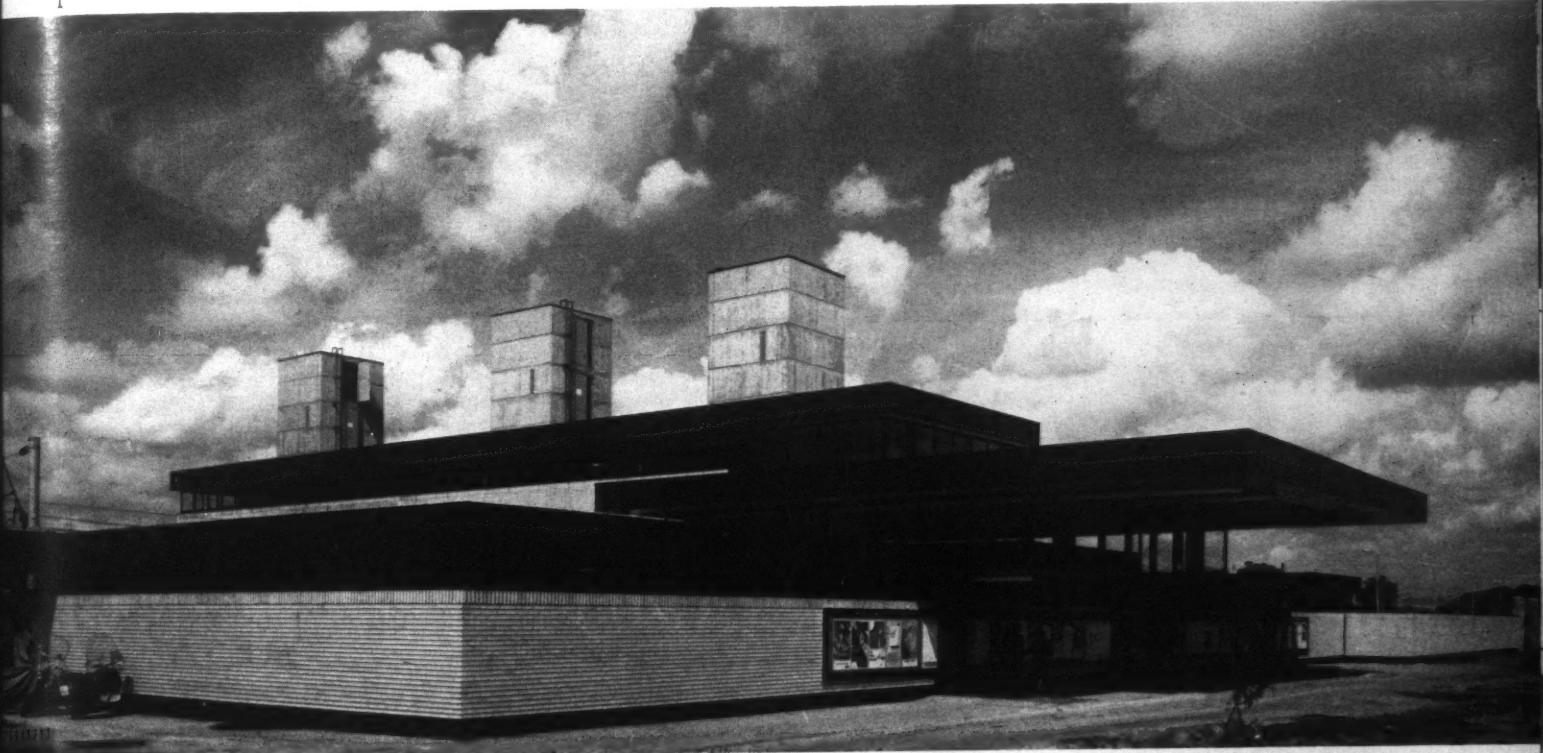
3, the main booking hall; its double height provides an intermediate roof level between that of the single-storey building and that of the over-bridge, enabling stairs to be accommodated without sloping roofs.



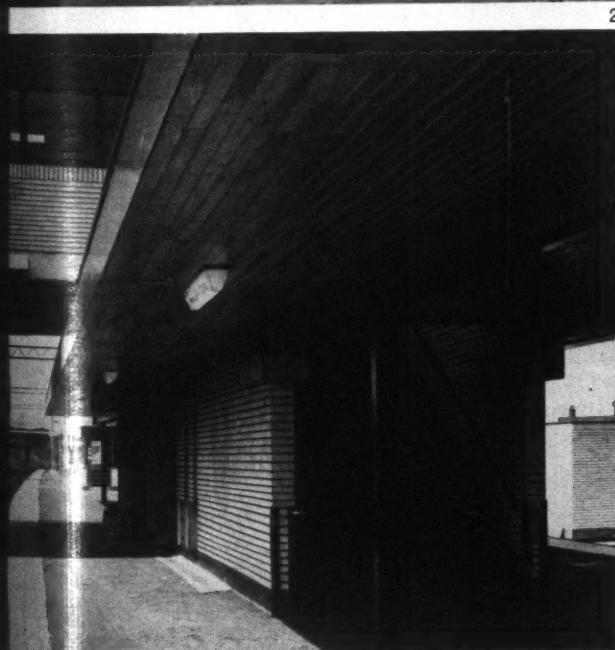


**SOME RECENT BUILDINGS FOR THE RAILWAYS**

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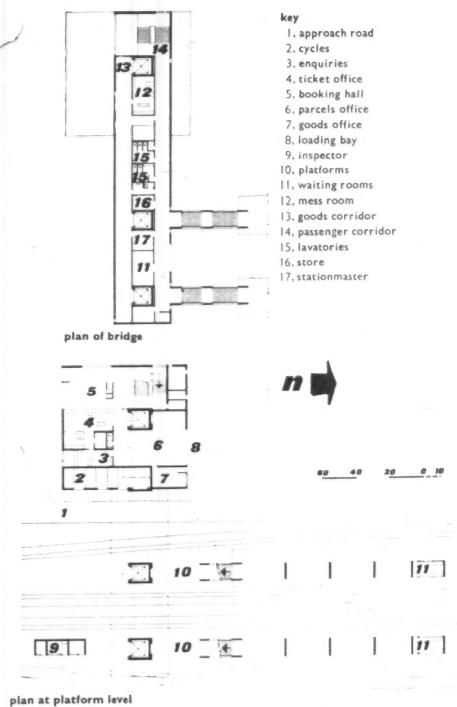


### STATION, BROXBOURNE

Broxbourne station, Eastern Region, has a much more compact plan to its main buildings than Harlow (page 313) and a fuller exploitation of the accommodation provided by the bridge.

4, interior of the stair hall; a fairly elaborately-planned stair rises in three flights to bridge level, but the interior relies on simple finishes and surfaces, with large areas of unplastered brick and other no-maintenance materials, massively detailed balustrade to the stairs, and glass rising clear to the ceiling and usually coming right up to an adjoining wall. The whole idiom is more sophisticated and 'brutalist'.

5, the exterior from the approach court (where buses can turn round). The over-bridge spans a service road to the goods-yards, so that the booking facilities, etc. (on left), connect with the passenger platforms only by way of the bridge. The windowless elevation to the parcels side of the bridge produces a single visual dominant satisfactory when seen from a static or moving viewpoint. It remains to be seen whether it is strong enough to master any soot-smudges that result from the elimination of smoke-lids (which Harlow retains, in vestigial form).



4

### STATION, PLYMOUTH

The reconstruction of Plymouth North Road Station, Western Region, is planned in five phases of which the first two are complete. The whole project was designed and put in hand under the late H. E. B. Cavanagh, former architect to the Western Region, and will be completed under his successor, R. L. Moorcroft.

6, Plymouth North Road Control—not in itself a station, but a power-operated signal box, on a basement storey of local stone—is the first phase and, more important, will mark the beginning of the approach-road

to the station's new main entrance, its present makeshift foreground being due for landscaping and planting after the road has been realigned.

7, trackside elevation of the Control Box, showing its location on the end of the platforms, and the large windows looking out on to the tracks. Further stages of the rebuilding will include a run of rather similar single-storey structures along this platform and screening it from the approach road, and a nine-storey office block over the entrance and concourse area.

### STATION, CREWE

Crewe, most famous name among stations in Britain, marks the point of juncture between the first (Crewe-Manchester) and second (Euston-Crewe) phases of the Midland Region's major modernization and main-line electrification scheme. The station has been re-fronted, track-work having necessitated the demolition of the old high-level entrance.

8, the new booking hall, divided by a glass

screen (on right) from the port-cochère which shelters the entrance and waiting traffic.

9, the ticket barrier and collector's booths. Here again, is an example of the search for a simple and convincing style of wood-work detailing for station interiors. Under W. R. Headley's regime at Midland Region this tendency has also received considerable impetus from the use of structural timber—as at Oxford Road, Manchester (page 316)

as well as at Crewe.

10, Crewe station from the approach. The roof consists of built-up wooden hyperbolic-paraboloid vaults, supported at their points on steel stanchions, and steadied by subsidiary structures front and back. In front this structure carries the glazed wall of the port-cochère, but not the canopy for the bus shelter—presumably another case of divided control producing two structures where one would have served.

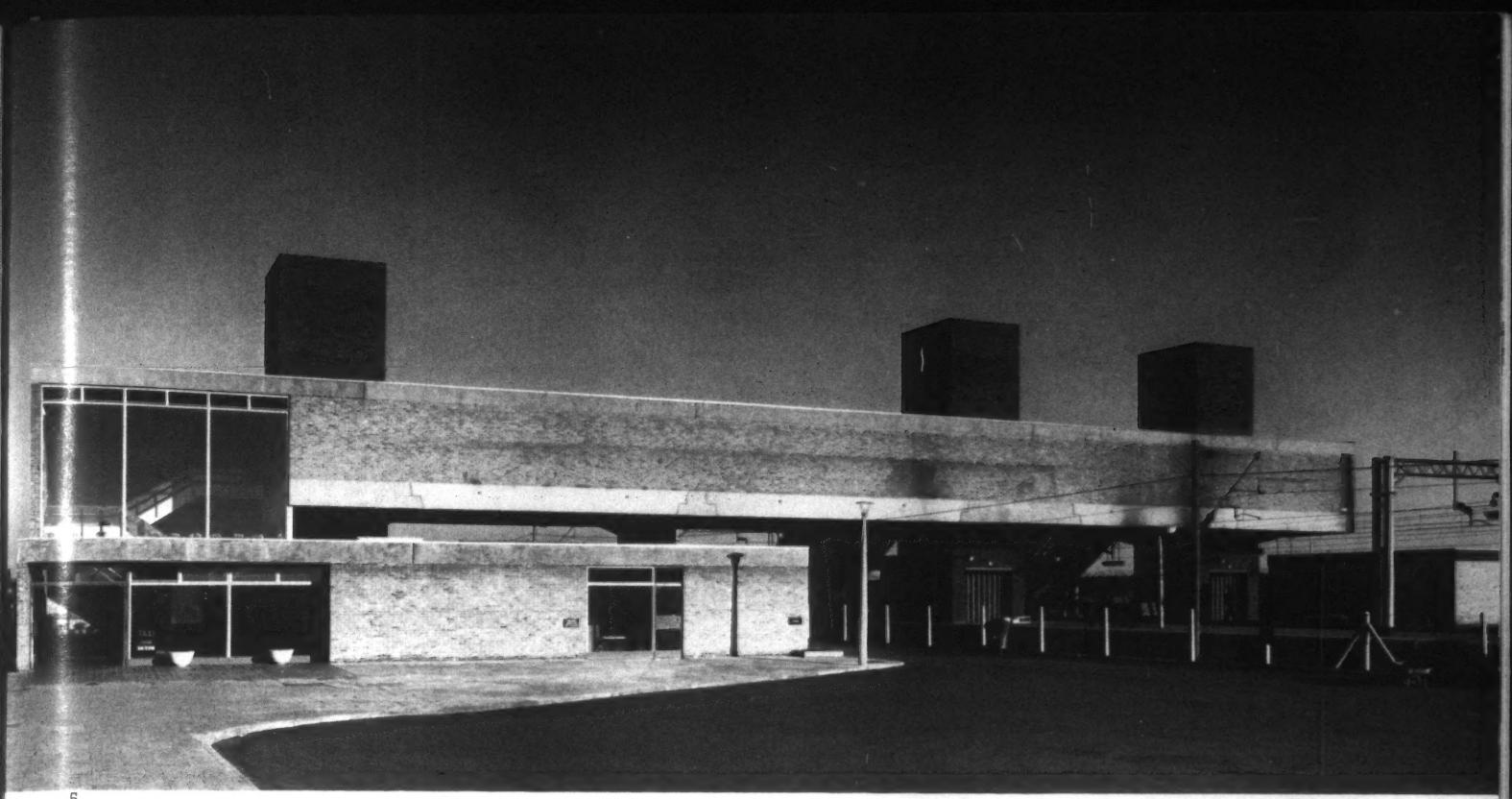


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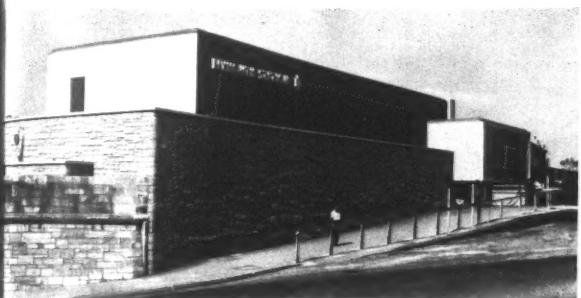


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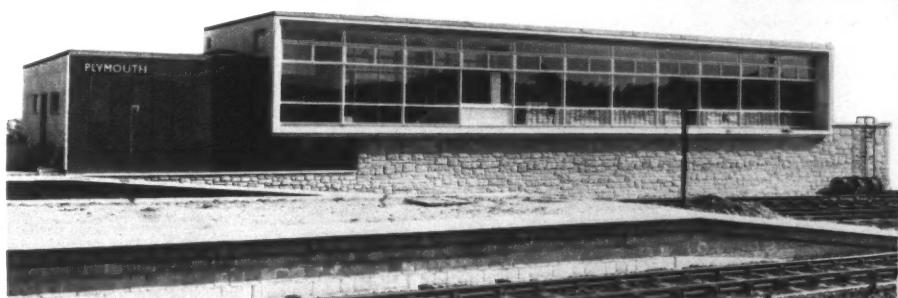
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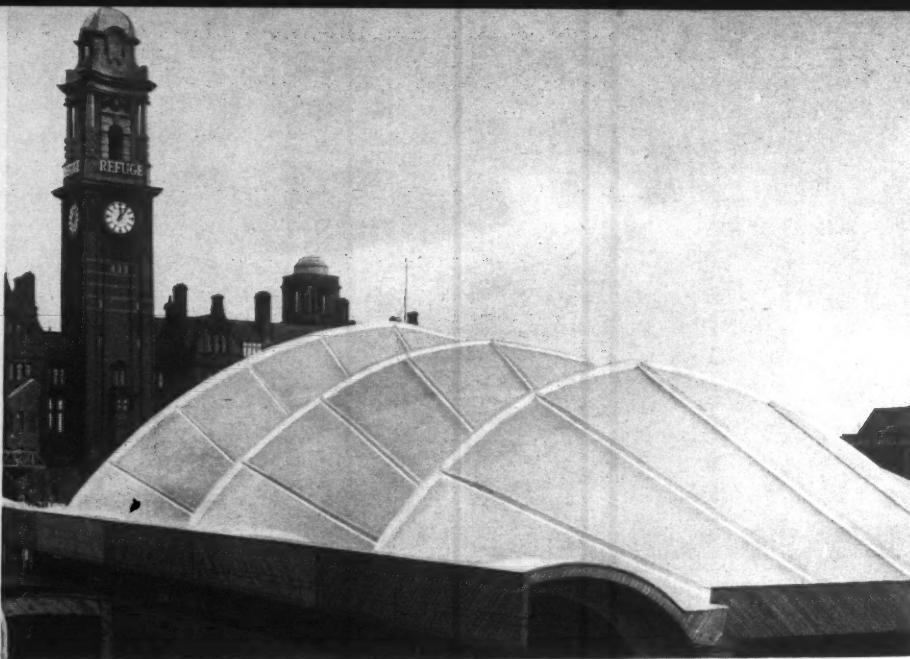
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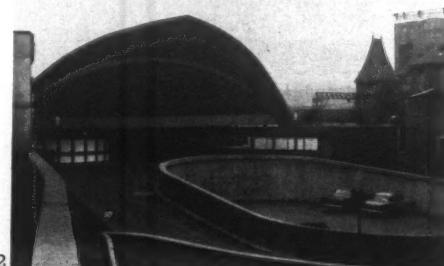
### OXFORD ROAD STATION, MANCHESTER

Oxford Road, Manchester, Station, Midland Region, represents a bold innovation both in structural method and architectural form. The site is one which invites a strong and simple architectural form in order to dominate and unify the surrounding undistinguished buildings in competing styles. Once again, track-work in connection with electrification required the complete replacement of an existing station, with the added complication that Oxford Road is an interchange between two different electrified systems, for one of which the station is now the terminus. Between the two sets of lines there remained a triangular space suitable for the site of a station concourse, and the conoidal wooden roof is well adapted to such an irregular plan—the spans of the vaults decrease from 100ft. almost to a little over 40ft.

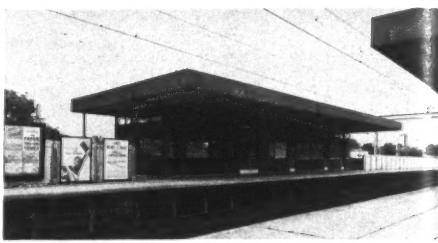
11, the vaults from the smaller end. The arches and tie-beams were prefabricated, but the shells were nailed and glued from three layers of planking *in situ*. In the foreground, the arched, cantilevering canopy that shelters the actual platform.

12, from the approach side, with car-parking pool between the ascending and descending ramps. The open end of the largest vault nods forward partly for effect, and partly to balance the weight of the structure. 13, in the central concourse under the main vault: station entrance at left, showing the relationship between the legs of the canopies and of the vault. The wood detailing of the waiting room wall at left exemplifies the originality in joinery encouraged by contact with experimental work in structural timber.

12



14



15

### MIDLAND SMALL STATIONS

A branch of railway architecture that has not been given enough credit is the Midland Region's programme of development in small stations, partly or wholly prefabricated. Although these belong to a tradition that goes back before the days of nationalisation, to Sir Leslie Martin's development-group work on prefabricated station structures in 1947-48. But it is not directly descended from that work, and now embraces two basically different types: one with a built-up canopy overhanging the platform, the other with a compact regular structure lying behind the platform.

14, 15, Heald Green and East Didsbury stations. Heald Green, 14, is something of a primitive among this type, with its massive canopy and faceted infill panels. East Didsbury, with a canopy built up from V-shaped trough units and a sophisticated use of wooden panelling and framing for the subsidiary structures, is more advanced. 16, Sandbach Station, typical of the other series with nearly square bays, continuous fascia, but no overhanging canopy.

17 (opposite top), detail of Chelford, of the



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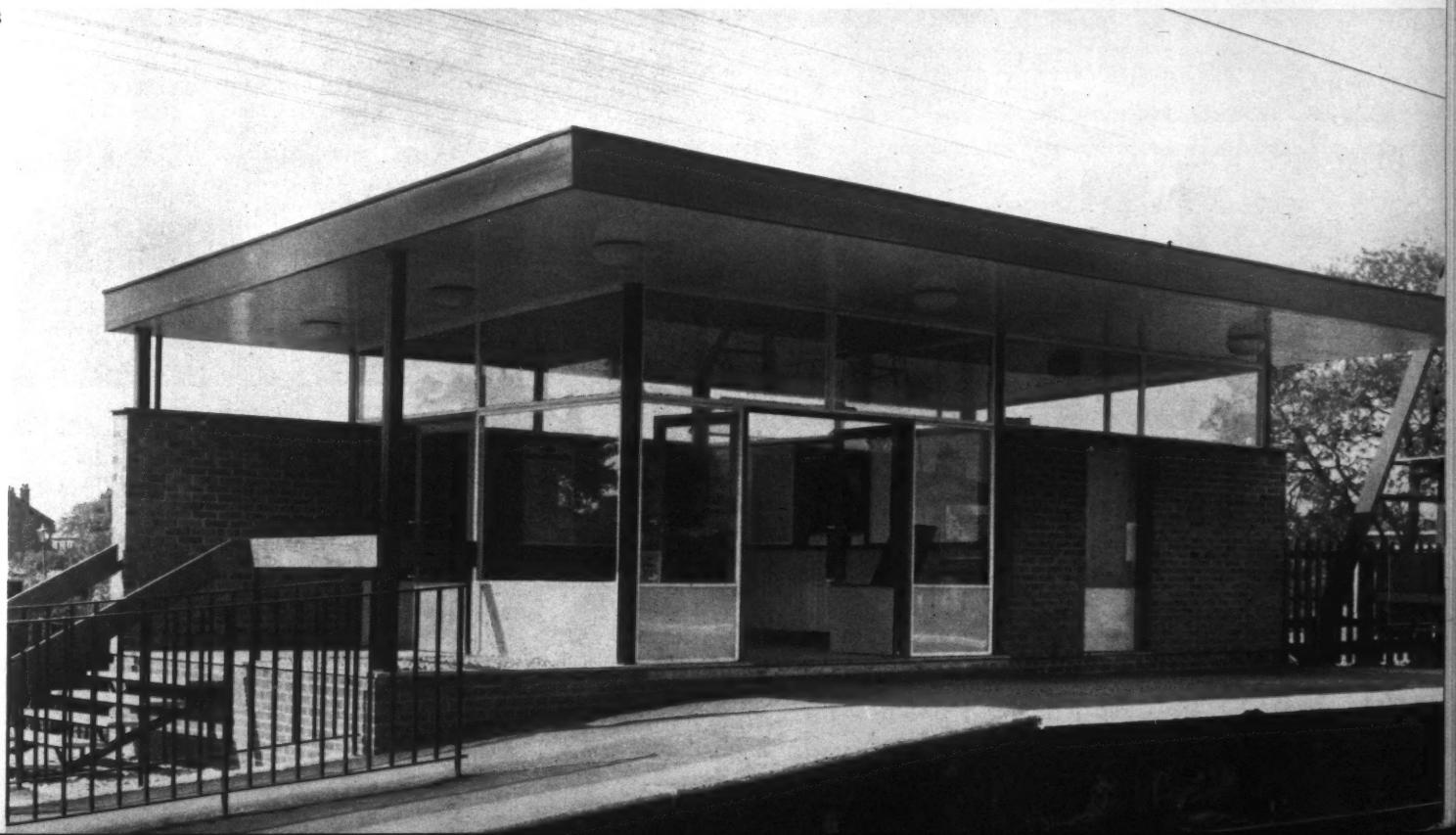
same type as Sandbach. Its structural logic and well integrated details—including lettering—would make this type a strong candidate for a nationally usable small-station structure if only railway architecture were as logically organized.

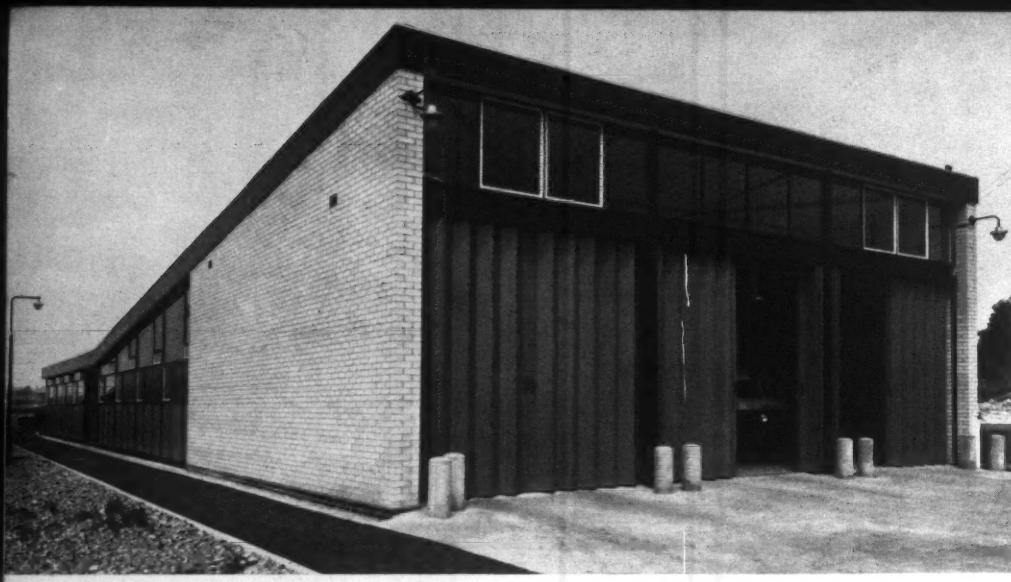
18 (opposite page, bottom), Navigation Road, most developed and most attractive of the canopy types designed by Midland Region.



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#### MISCELLANEOUS BUILDINGS

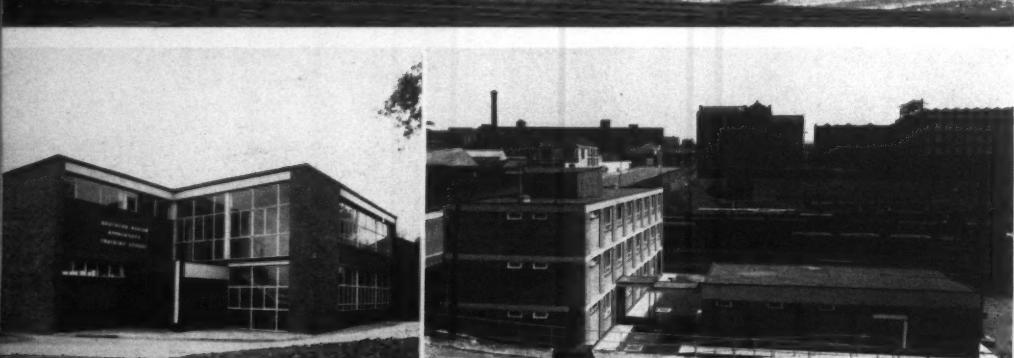
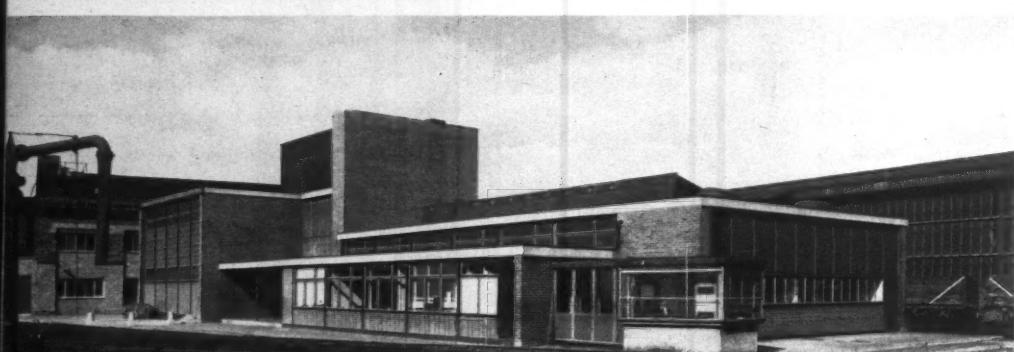
The railway buildings that the public uses, such as stations, and the railway buildings that the public notices, such as signal boxes, constitute only a part of Regional Architects' output, and there is a steady and continuing volume of work devoted entirely to internal matters, such as administration, control and welfare. Although this work constitutes the bread-and-butter employment of every Regional Architect, in no case does it appear to have formed the solid basis of a regional vernacular or to have served for experimental development. Nevertheless, the quality of work often reaches a high level of decent functionalism, as these examples show.

19, transport garage and offices, Colchester, for Eastern Region. The use of brick and exposed metal construction shows some points of comparison with Harlow Station (page 312), and although the bollards cannot be duplicated there, the use of such concrete details to protect the main structure is in the same functional line.

20, amenities building, Saltley Motive Power Depot, Midland Region. This multi-purpose block, fitted into a fairly restricted site, is typical of the need and the problem constantly facing the railways in buildings of this sort. The functions cover a variety of purely human needs—food, hygiene, storage of personal effects, clothes, etc.—administration and traffic control, all of

20 which must be housed near the engine sheds and sidings even if, as in this case, it means using sites already occupied by structures in use—the far end of the block was made by converting existing accommodation under the water-tower.

21, apprentices training school, Eastleigh, Southern Region: the entrance and classroom block, with the roof of the workshop block just visible beyond. Southern's modernization programme has not yet produced as much notable architecture as in some other regions, but with work reputed to run to £3,000,000 ahead of them, 21 regional architect, Harold Pittaway, and his 22 staff, have enormous opportunities.



22, offices and amenities block, Huskisson Dock, Liverpool, Midland Region. The public have access to offices at first floor level in the three-storey block, with clerical offices above. The ground floor and the single-storey block are occupied by wages staff. 23, 24, amenities block, Barry Motive Power Depot, Western Region—a portent of a new approach, since this is a temporary structure (estimated life 30 years) with a Clasp/Brockhouse frame because of poor soil conditions. 24, an attempt to make architectural sense of the problem of posting up notices and operating schedules.



25

### OFFICE BUILDINGS

Office buildings tend to be alike, and any impression that there is a specifically 'railway' type of office block is due almost entirely to the fact that only Eastern Region has so far needed to build any quantity of office-space, and has evolved a characteristic regional style, unlike that of any other offices built in Britain since the war. The pioneer of this group was the Traffic Manager's office at Cambridge (AR, May,

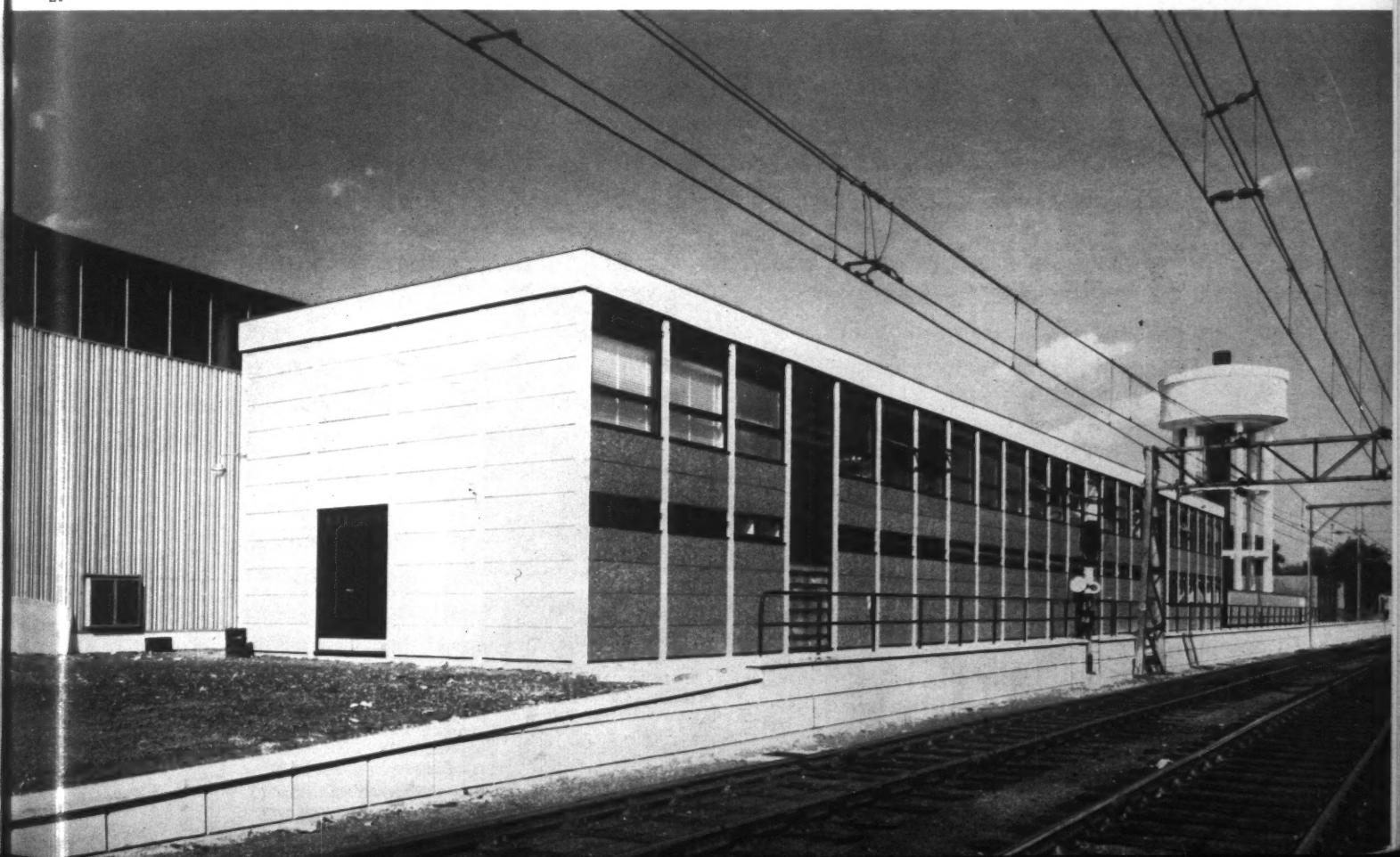
1958), and both the buildings illustrated here are, in a fairly direct sense, its descendants.

25, 26, Traffic Manager's offices, Doncaster. Closely related to Cambridge in bulk form as well as structural method, this block is, in fact, a floor higher. Again an Intergrid pre-cast, post-tensioned concrete frame rests on an *in situ* cast reinforced concrete first floor slab, but the treatment of the ground floor is more direct, without projecting sub-structures and with rectangular instead of

26

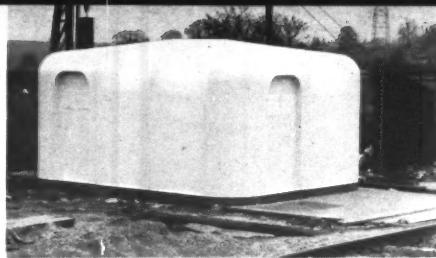
round columns. A more important innovation, visually, is the low plinth on which the whole structure rests—among the functions of such buildings is to introduce a note of order into the often century-old chaos of the station-approach, and the clearer the architectural statement it makes, the better. 27, office, electric car sheds, Ilford. Another visual innovation, but the collision between architect's building in the foreground and engineer's building behind is only too obvious.

27



**SIGNAL BOXES**

28, signals relay room, Stanford-le-Hope, Eastern Region, British Railways' most revolutionary building to date; a modular shell-structure in glass-fibre reinforced plastic, that could herald a complete transformation in ancillary line-side buildings.



28



29

With the introduction of electrical colour-light signalling systems the traditional signal box is obsolete, but its successor is only slowly finding its characteristic architectural form.

29, Broxbourne, Eastern Region, showing the basic elements of the 'new' signal box—a control room with large and suitably shaded windows, on top of a large structure containing relays and other electrical and ancillary services. No attempt has been made to suppress the cleaning gallery outside the windows

30, Tollerton, North-Eastern Region, the first of the new-type boxes in the north, made necessary by the modernization of

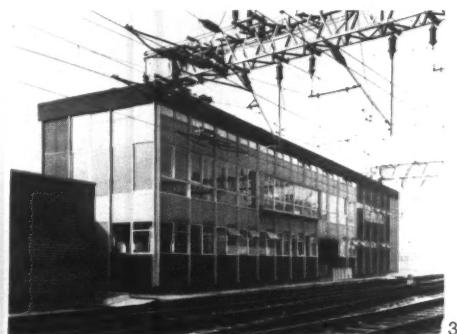
the King's Cross-Edinburgh route north of York, and the only one so far that does not have a brick lower storey.

31, Manchester, London Road. Signal Box, Midland Region—a curtain-walled structure with the relay rooms and ancillaries housed under the arches of the viaduct on which the box stands.

32, 33, Rainham, Southern Region. The interior, 33, shows how complete has been the revolution in signal operation. The traditional apparatus is replaced by a console and control-display much like that controlling any other large electrical network. Later Southern models will have an exterior cleaning gallery.



30



31



33



32

V

Henryk Blachnicki  
Kenneth Browne

# P OVER & V UNDER

V

## *a survey of the problems of pedestrian/vehicle segregation*

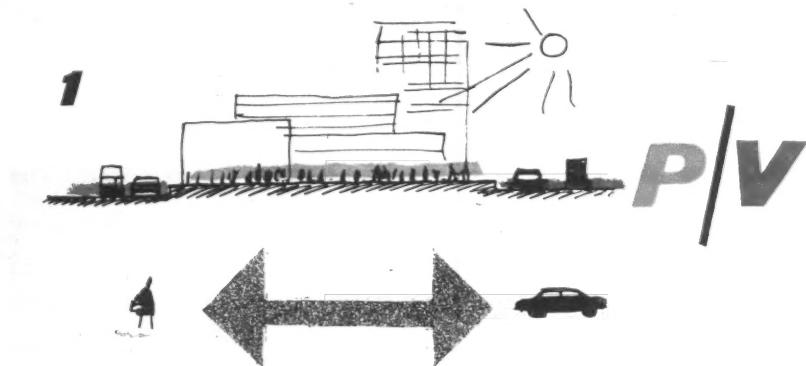
Segregation—that is to say the physical separation of pedestrians and vehicles—has now become essential. We have reached the stage when the existing kind of road, little changed in form since Roman times\*, will no longer do the job; the crazy situation of streets jam-packed with cars, each capable of 70 mph but moving, on average, at the rate of a horse-drawn bus a hundred years ago. Utterly inefficient as transport, under present conditions, they are at the same time a highly efficient lethal† barrier to the pedestrian and effectively divide the urban landscape by rivers of metal. Despite this, car production continues to increase‡ controlled only by supply and demand. Already we have the most densely packed roads in Europe and mere widening, the standard road engineer's solution, precipitates the destruction of environment whilst failing to solve the problem. In London the unchecked increase in office space and the death-throes of London Transport have, between them, almost guaranteed congestion on an unprecedented scale; and, alas, not only vehicular congestion, which can in the end be controlled. More pedestrians are coming into our big cities than ever before. Multi-storey offices replace the 2/3 storey residential buildings for which the streets were designed and rush-hour travel ensures maximum congestion in the limited space there is. The eventual answers are outside the scope of this article—they range from rehabilitated towns in Leicestershire to a miniature City of London at Malden or Cheam—but the immediate problem, a first-aid problem, is to separate two legs and four wheels as one would separate the escalators from the electrified lines in the Underground. The old network of the City of London does that, in a sublime way, with its sequence of city churchyards and alleys which seem a hundred miles away from Leadenhall Street or Lothbury, but the system needs to be extended and made continuous, eliminating the physical intersection of pedestrian and vehicle without eliminating the visual contact which is one of the essential parts of metropolitan life. If the constituents are separated out, each can then develop on its own terms, and to its own scale, instead of wearing each other down. A swinging curve designed for 30 mph in a Ford Consul is meaningless to the pedestrian, unless drunk, but it is fun to watch from above—and sometimes from below—if the pedestrian has his own separate complex of

\*At first men and horses used the same track. Then pavements were invented to protect pedestrians from dirt thrown up by wheels. The centre track and parallel footpaths date back to the Romans. They used stepping-stones to cross the road, wheels passing between them; today we also have pedestrian crossings.

†Pedestrians account for 40 per cent of road casualties in this country; 90 per cent of these are in towns.  
‡750,000 more cars were produced last year in Britain than 10 years ago.

spaces—angular, irregular, surprising, contrasting. Imagine the Venetian canals as motor-roads and the point is made exactly; independent systems each with its own rules, each augmenting the other. The following article is a chart of the various attempts that have so far been made in fact and fancy to achieve this. In each case the designer has tried in one way or another to provide a new environment, equally efficient both for pedestrian and vehicle, but most of the schemes still remain textbook diagrams; they still await the magic touch; the richness, humanity and sheer *joie-de-vivre* that made Venice a wonder of the world.

### The 3 types of segregation :-



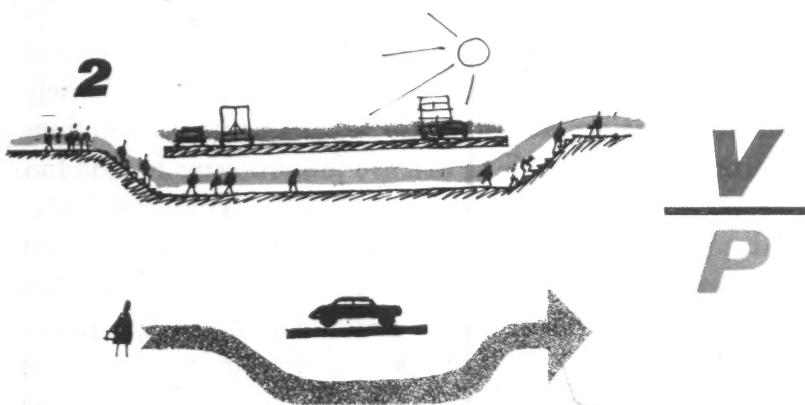
The three ways of separating vehicles from pedestrians are:-

#### Horizontal

(the Radburn principle and the precinct)

(a) The Radburn principle: an interlocking system of roads and footpaths which provides the best solution yet devised for housing areas (see facing page).

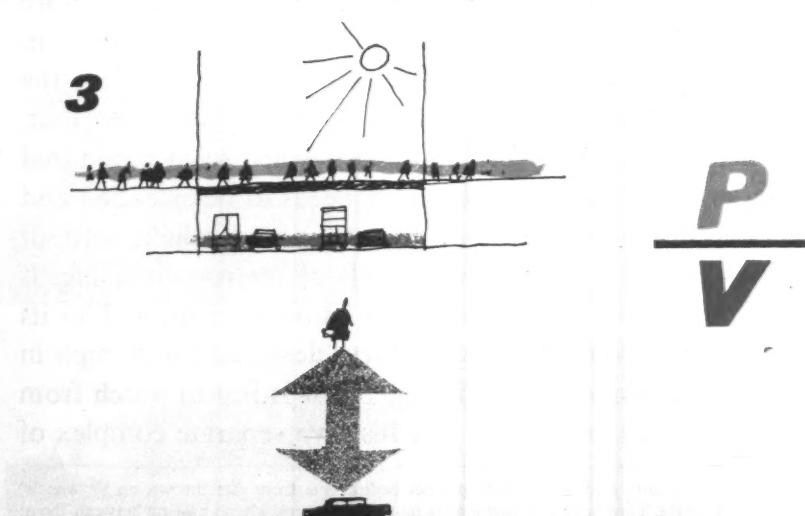
(b) The Precinct; or pedestrian island; a solution for central areas which gives protection for the pedestrian but is very wasteful of space. The provision of adequate car parks and service roads breaks the continuity between the centre and the rest of the community. It becomes an island in a sea of parked cars and definite fronts and backs to buildings result. One advantage is that it is simple to convert part of any town into a precinct. Underground services need not be affected.



#### Vertical

(the subway and elevated road)

Any vertical segregation makes at least double use of land and this is of great importance in city centres. The subway has the advantage of only requiring a change of level of about 10 ft., but the disadvantage of not being generally liked by the public due to its association with public lavatories and the idea of the rat scuttling down its hole. Lack of fresh air and daylight, and the feeling of claustrophobia are other objections. To make subways acceptable, shops and cafes must be provided below ground to give life and interest. Underground services complicate subway construction in existing streets.



#### Vertical

(the pedestrian deck)

Here most of the disadvantages of the subway system can be overcome while retaining the advantage of double land use. As the pedestrian platform has to be 18 ft. or so above road level, to clear buses, the provision of easy ramps, escalators and lifts is essential. It should be planned with shops, restaurants, pubs, etc., all on a pedestrian scale in contrast to vehicle scale below. This type of scheme needs to be carried out over a large area or pedestrians will not think it worth the climb. It has great advantages; view, enjoyment of air and daylight and complete freedom in planning; pedestrian movement can be independent of the road system below—in consequence the pedestrian's morale is lifted, as well as his body, and he feels master of the traffic rather than its potential victim. This system could be used to weld the town once more into the compact urban form it should have.

How each of these basic types has been developed is traced on the following pages (vehicles red, pedestrians yellow).

# 1a Horizontal (Radburn type) P/V

## RADBURN

Clarence S. Stein & Henry Wright

Built in 1928, this pioneer housing scheme at Radburn, New York, marked the first real attempt to resolve the conflict of man and vehicle. In place of the thwarted living conditions of ribbon development and the typical housing estate, carved to fragments by its own access roads, the Radburn scheme provided all householders with access to a continuous belt of green parkland. This was achieved by means of an interlocking system of roads and footpaths, 1. The underlying principles of the scheme were:

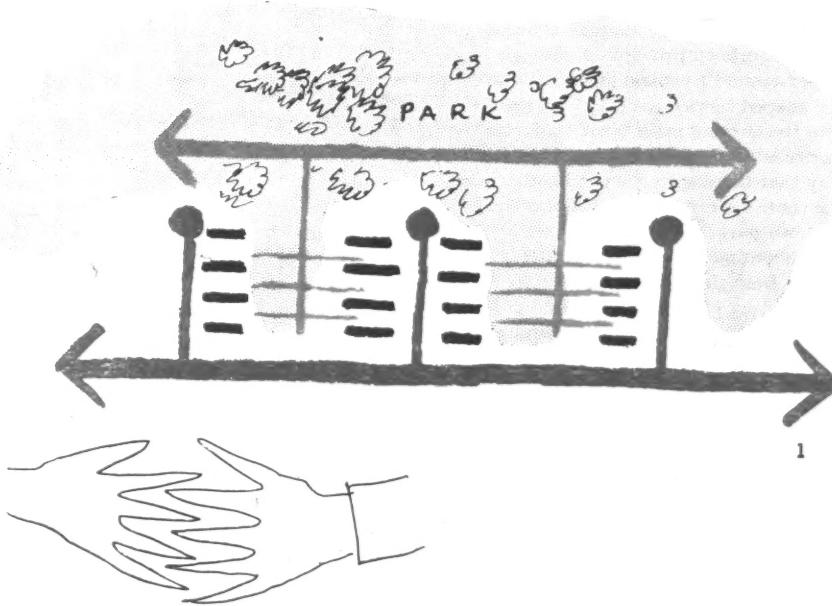
*Complete separation of vehicles and pedestrians by the provision of footpaths and walks quite independent of the road pattern, with over- or under-passes at every junction of road and footpath.*

*Roads planned according to their functions; service roads for parking and visiting; collecting roads for local movement; through roads and highways for long distance travel.*

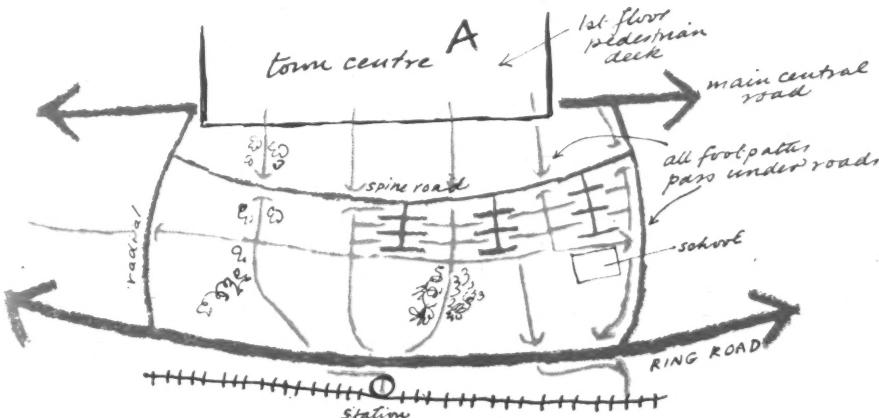
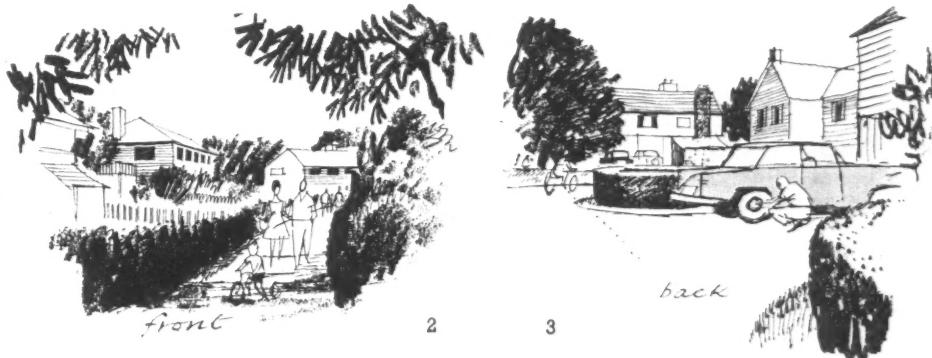
*Parks designed as linked open spaces for pedestrian enjoyment and relaxation. Roads and park interlocked like the fingers of two hands.*

*Houses with living rooms facing on to parkland, 2, and stores and service rooms facing cul-de-sac roads at the back, 3.*

The Radburn system, besides providing open space which people can really use, also makes life safer for the pedestrian and car parking and garaging easier. Though this scheme has been imitated in a number of countries, in Britain planners have been slow to realize its implications and the majority of layouts based on it so far have been uninspired.



*Interlocking system of roads & foot-paths*



*DIAGRAM  
to Show the principle*

## CUMBERNAULD

L. Hugh Wilson

Now under construction on a hill-top site near Glasgow, Cumbernauld is the first of the New Towns to apply the Radburn principle. In consequence its pattern, 4, is quite different from the others. Segregation of vehicles from pedestrians has been applied throughout and with no pavements along its main roads, there will be a completely separate footpath system designed for short walking and carrying. This new town will cater for an eventual 100 per cent car ownership, unlike its predecessors, and the town centre, A, will be built on a large pedestrian deck with the main central road and car parking beneath it. Lifts will carry pedestrians to the main shopping level above.

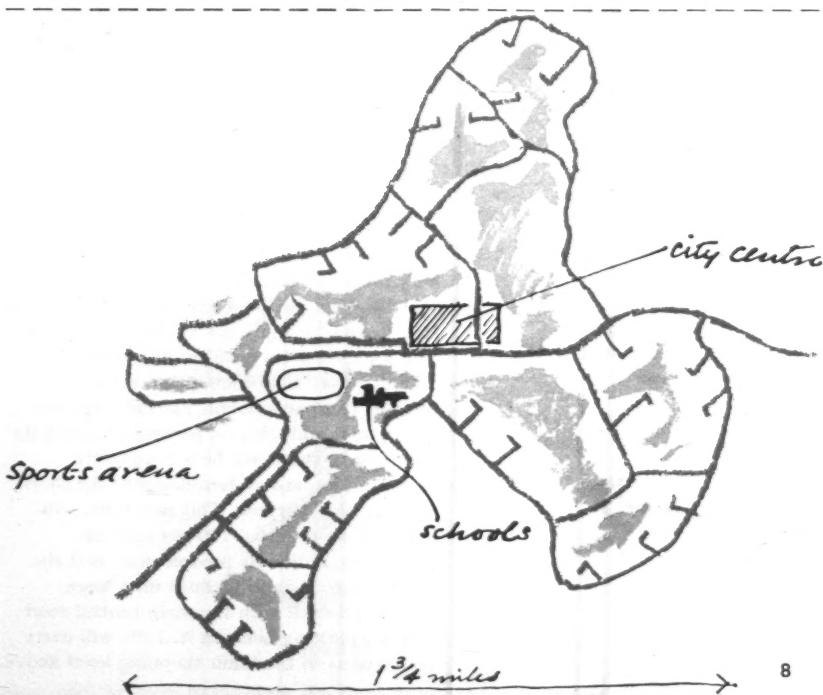
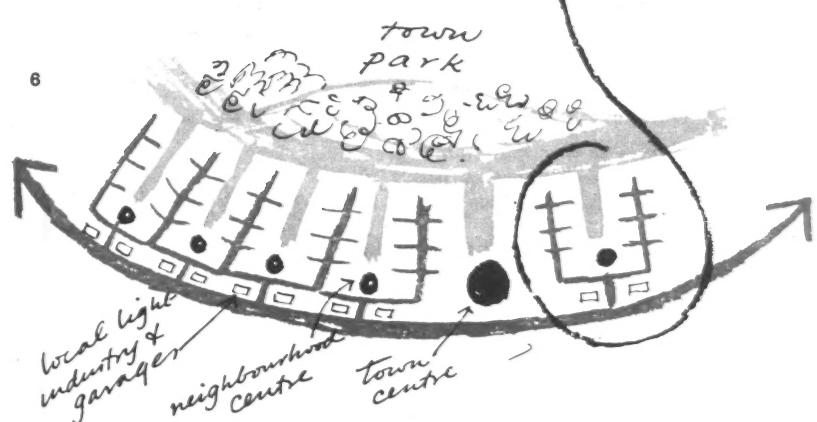
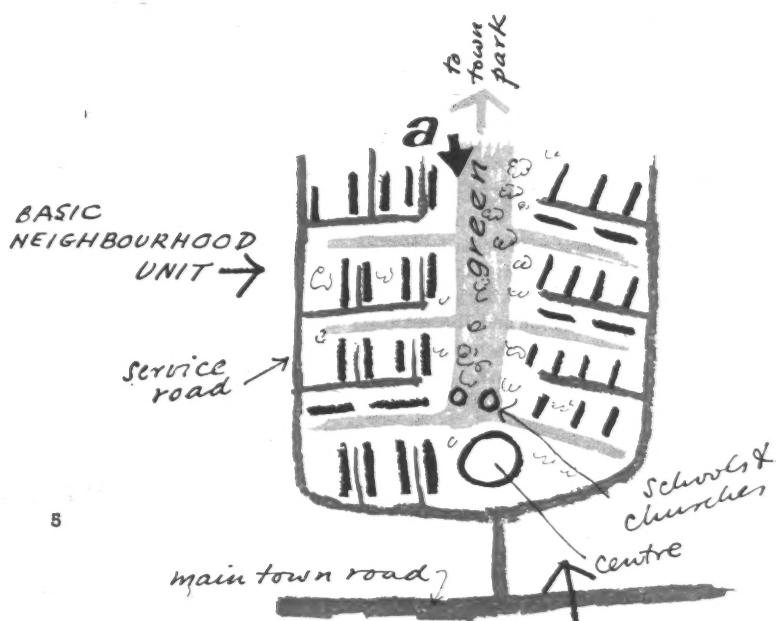
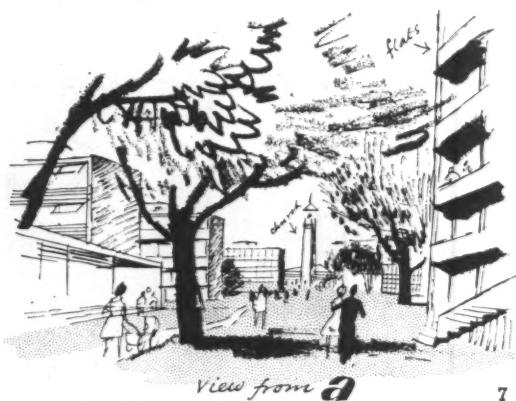
**New Town, COLOGNE**

*Pecks, Ludmann & Meyer-Hermann*

Conceived as a satellite community of 100,000, and now building, its plan is based on the neighbourhood principle. Buildings are grouped around a central green with an outer 'U'-shaped service road, 5. This road feeds into the curving main town road which again encircles all neighbourhoods, 6. In the same way that housing in the neighbourhoods faces the central green, so all neighbourhoods face the town park.

These neighbourhoods contain all types of dwellings from single-storey houses to multi-storey flats, each neighbourhood holding approximately 6-9 thousand people. Footpaths lead from the houses to the tree-planted central green, 7, and along it to a sub-centre with shops, schools, church, community buildings and a local crafts centre.

By way of the greens and town park, the main town centre itself can be reached on foot and every building is accessible without having to cross any roads.



**GITE DE SABENDE, Guinea**

*Ecochard, Lagneau, Weill & Dimitrijevic*

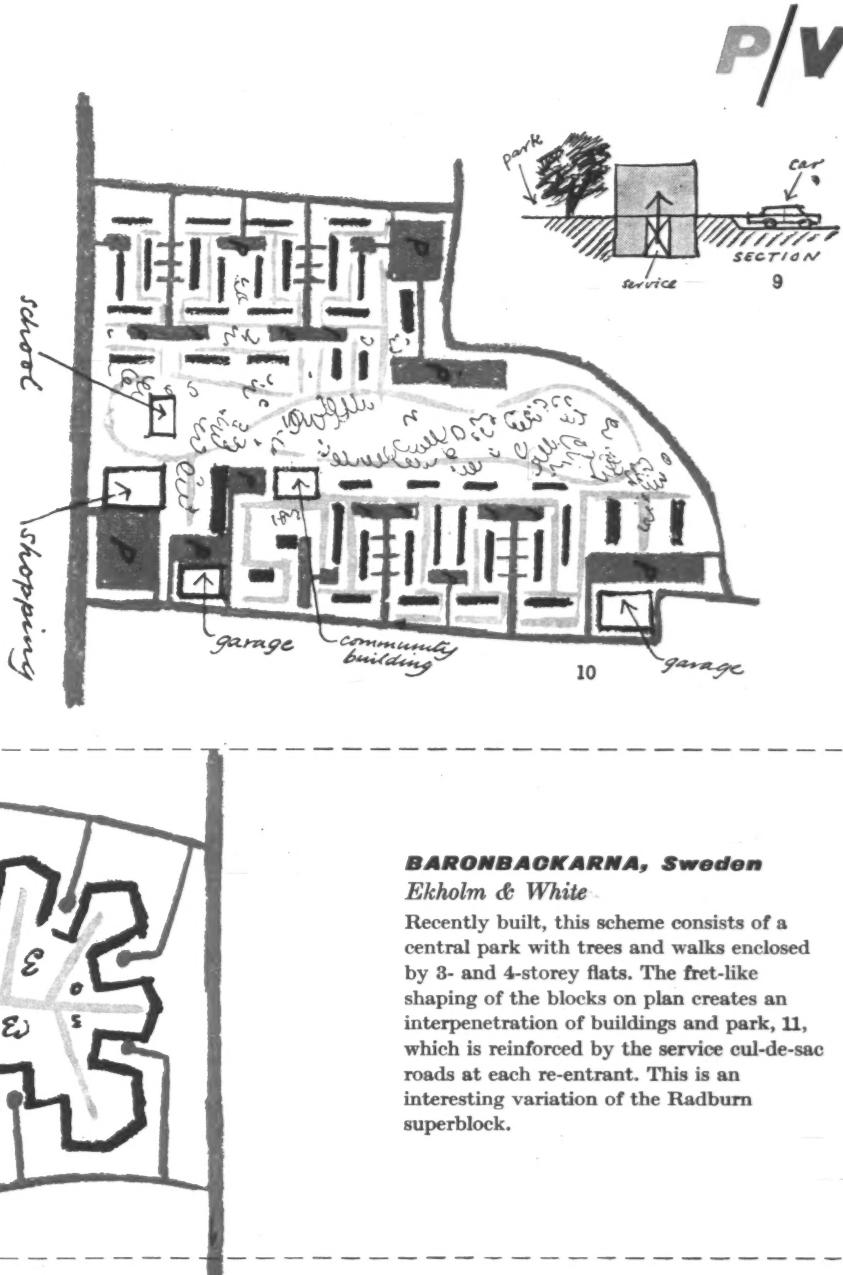
In this project there is an east-west spine road beside which the city centre is placed. From the spine, loop roads run out to enclose the neighbourhood units which are in turn served by cul-de-sac roads. Parks in the centre of each neighbourhood interlink by means of footpaths running under the roads and converge on the town centre. This is a well integrated example of the parkway concept.

### Lafayette Park, DETROIT

Mies Van Der Rohe & L. Hilberseimer

Steel and glass houses set in a park, with a separate road and footpath system, are the features of this partly completed scheme, 10. In central Detroit, it will house 7,000 people in single-storey courthouses, two-storey terrace houses and in 21 storey flat blocks. To prevent cars from visually dominating the landscape, the houses are raised on grassed platforms, 3½ feet above road level, 9; cars are parked in the open, in front of the houses and in car parks. There are no individual gardens, and so the park-land can penetrate the spaces between the houses. As the roads are below park level a visual continuity of open spaces is achieved.

Service to the fully air-conditioned houses is from basement level with access at each end of the terrace by external stairs.



### BARONBACKARNA, Sweden

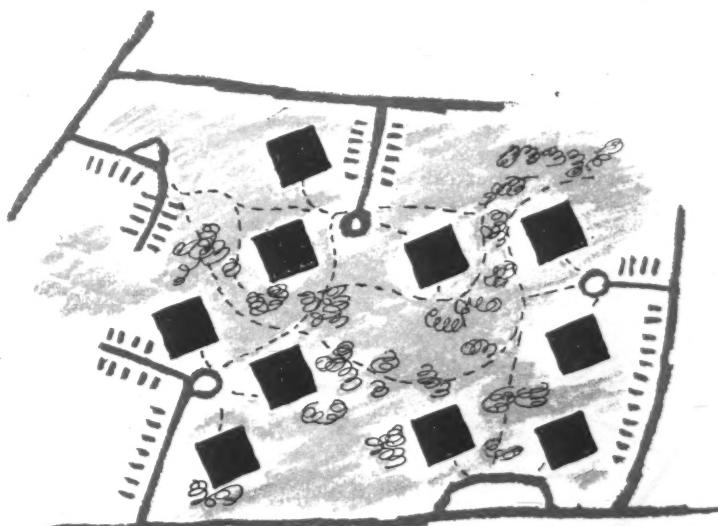
Ekhholm & White

Recently built, this scheme consists of a central park with trees and walks enclosed by 3- and 4-storey flats. The fret-like shaping of the blocks on plan creates an interpenetration of buildings and park, 11, which is reinforced by the service cul-de-sac roads at each re-entrant. This is an interesting variation of the Radburn superblock.

### FONTENAY-AUX-ROSES, France

G. Lagneau, M. Weill, J. Dimitrijevic & J. Perrotet

Now completed, this scheme consists of a number of five-storey flat blocks, of an identical cube shape, set in a well landscaped park, 12. They are serviced by cul-de-sac roads which leave the centre of the park free of vehicles.



12 cube like buildings set in a park with vehicle access to fringe only.

# P/V 1b Horizontal (precinct)

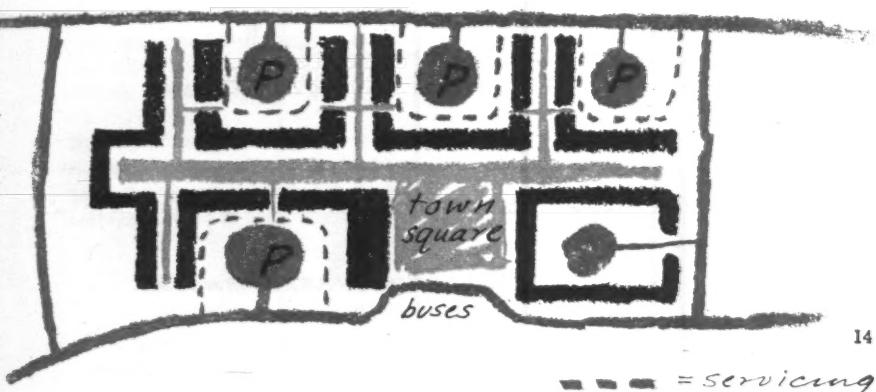
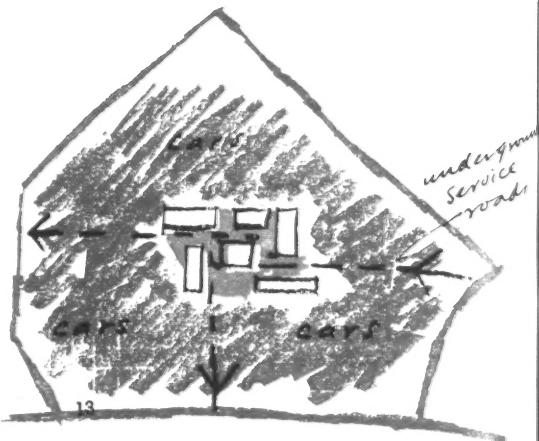
## Northland, DETROIT

Victor Gruen & Associates

Typical of existing American shopping centres; this is a pedestrian island surrounded by a sea of cars, 13. From an encircling and highly elaborate pattern of roads the customer drives his car to one of 7,500 parking places; he then walks to the central island, from which cars are totally excluded and which is serviced from a one-way underground road. This pedestrian precinct contains shops, stores, restaurants, an open-air theatre, a library, children's

playground, etc. The spaces around the buildings are attractively laid out with plants, flowers and sculpture but by contrast the open car parks are a hideous eyesore, breaking all continuity between the shopping centre and its surroundings. The popularity of this and many other similar shopping centres throughout the United States is due to its comparative convenience, complete safety, and the attractive layout of the central island.

This type has influenced for good and evil the design of New Town central areas both here and in Scandinavia.



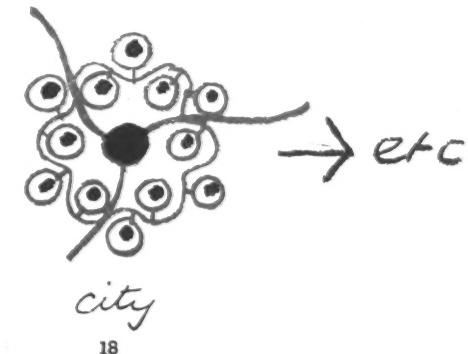
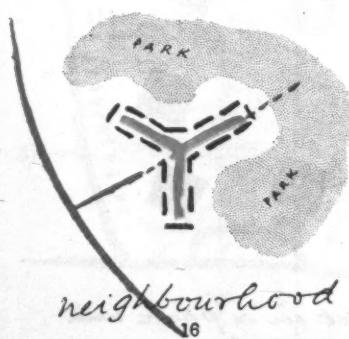
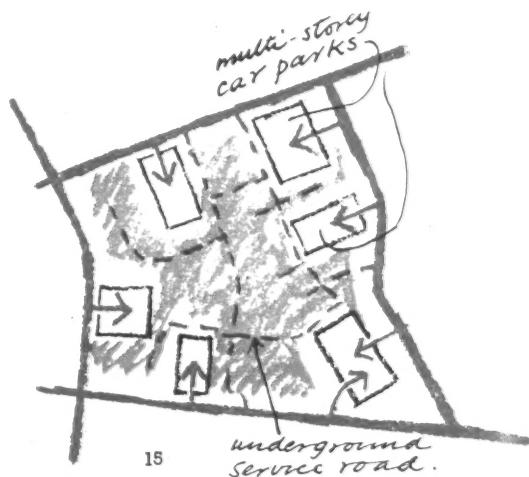
## FORT WORTH, USA

Victor Gruen & Associates

This frequently quoted scheme still hangs fire, but if built it looks like being a most interesting example of the application of segregation to central area redevelopment. It proposes a square mile of traffic-free pedestrian shopping ways, 15. Existing streets are retained and become pedestrian walks and concourses. This is made possible by a new ring road with elaborate intersections surrounding the whole area. Multilevel car parks are sited on the fringe so that every building will be within a few minutes' walking distance. In addition, there will be moving pavements. Delivery and servicing to the buildings will be from a one-way tunnelled road running

underneath the centre. In this scheme the car is kept under control; either stacked away or underground. There will be no acres of open car park to break the continuity.

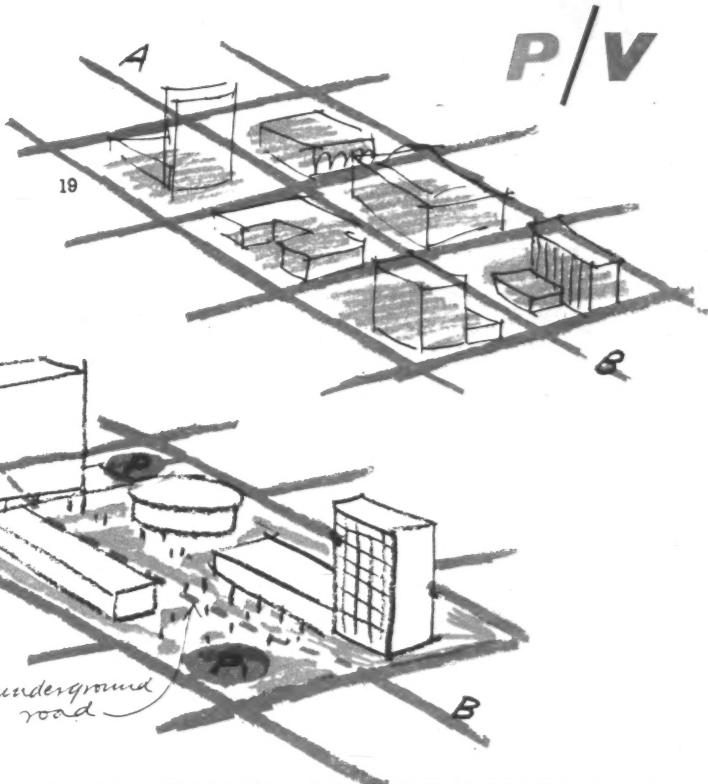
16, 17, 18, illustrate the development of Gruen's ideal pattern for the modern city, a city no longer strangled by its transport. His basic *neighbourhood* unit, 16, provides servicing and parking beneath an entirely pedestrian centre (containing school, shops, recreation), surrounded by green open spaces. This unit repeated, 17, creates a *community* (note link road running under each neighbourhood to the community centre); and a cluster of these communities form a *city*.



### TULSA, USA

Robert L. Jones & team

In this project the intention is to achieve complete separation of vehicles and people in a proposed new civic centre. To do this minor roads (see 19) are closed and the main East-West street, A-B run below ground. 20, This acts as a service road and entry to a large underground car park connected by escalators to the pedestrian level above. Here people can move freely among the buildings without having to cross streets. The spaces between the buildings have been pleasantly designed with covered walks, planting, etc. This is a good instance of how lost pedestrian territory can be won back from the traffic.

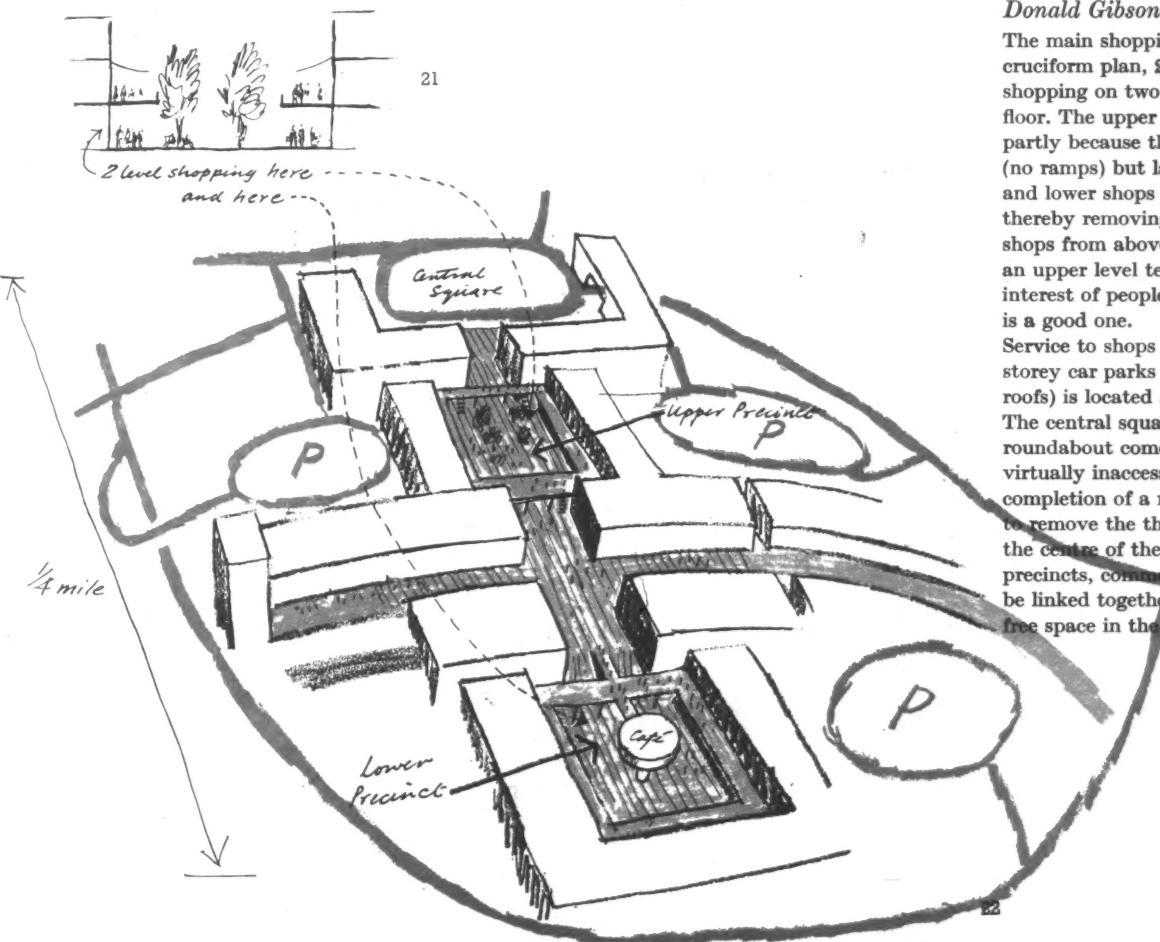


### COVENTRY

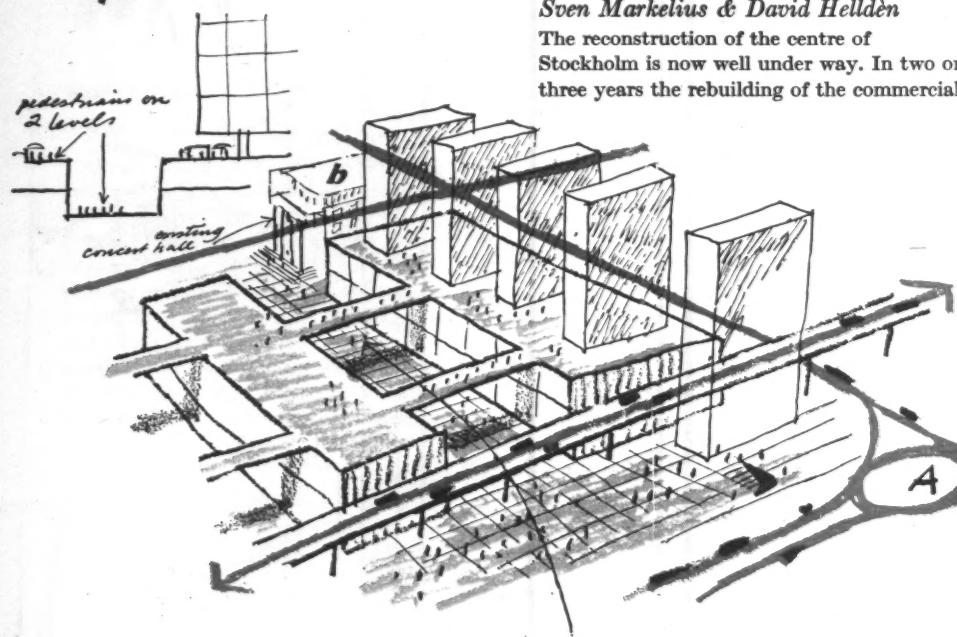
Donald Gibson & Arthur Ling

The main shopping centre is a precinct of cruciform plan, 22, with pedestrian shopping on two levels, 21: ground and first floor. The upper level is not much used, partly because there is only staircase access (no ramps) but largely because the upper and lower shops are let as one unit thereby removing all incentive to enter shops from above. Nevertheless, the idea of an upper level terrace with the added interest of people moving on several levels is a good one.

Service to shops and parking (in multi-storey car parks and on interconnecting roofs) is located at the back of the buildings. The central square (Broadgate), a traffic roundabout come garden, is at present virtually inaccessible. However, on completion of a ring road, it is intended to remove the through road that now tears the centre of the city apart. Then the two precincts, commercial and cathedral, can be linked together to form a large traffic free space in the centre of the city.



**P/V**

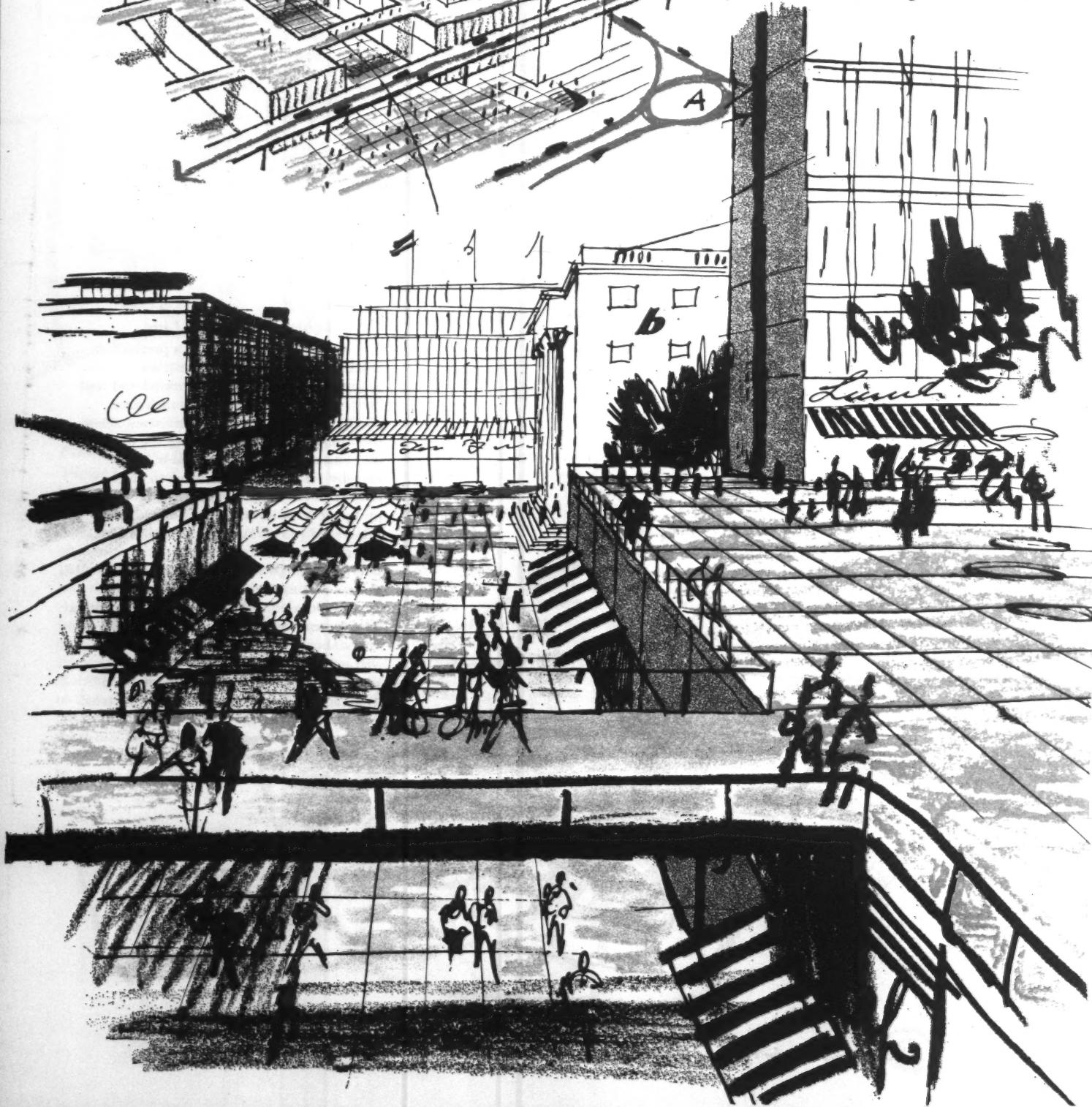


### STOCKHOLM

*Sven Markelius & David Helldén*

The reconstruction of the centre of Stockholm is now well under way. In two or three years the rebuilding of the commercial

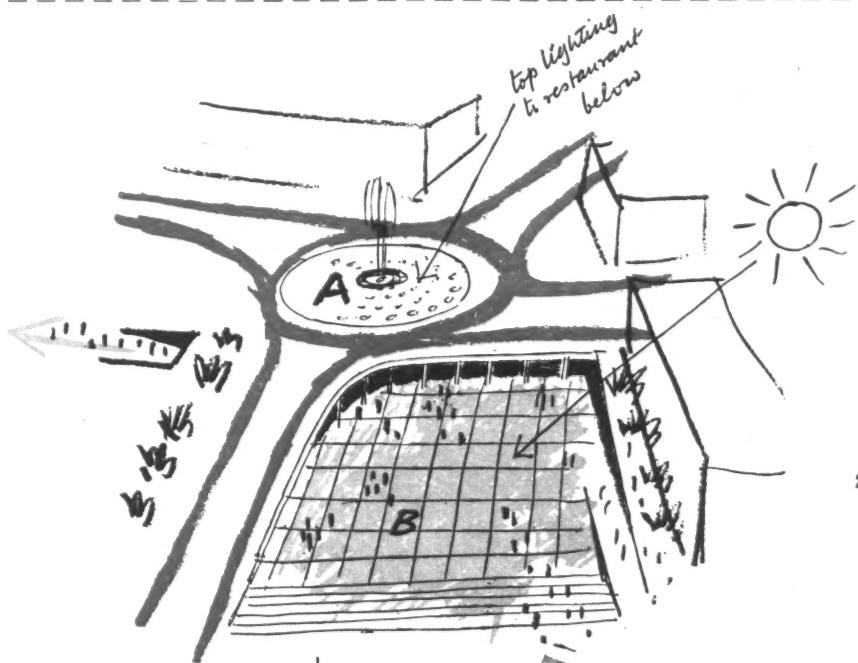
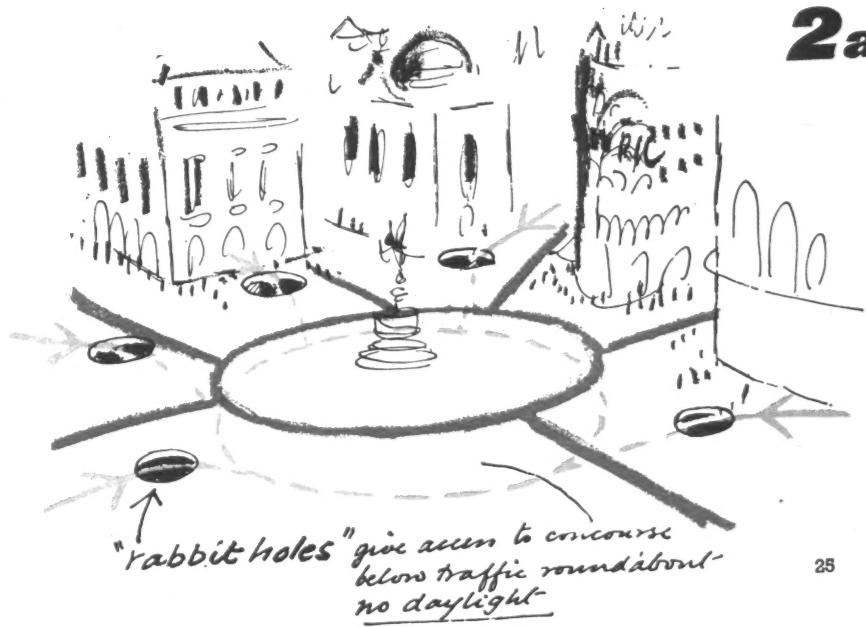
sector, the Hötorget, will be completed. Five 18-storey office blocks (by different architects), four of them rising from a 2-storey podium of shops, dominate the area, **23**. Ground level is freed for pedestrians by the use of space below ground for servicing and parking, using a three level traffic system. Two-storey shops flank the pedestrian concourse alongside the existing concert hall **b**, and their roofs are laid out as gardens. Bridges span the pedestrian street, linking these gardens, **24**, to form a new kind of metropolitan park, 2 storeys up, in which office workers and shoppers can relax, away from but not out of sight of the traffic.



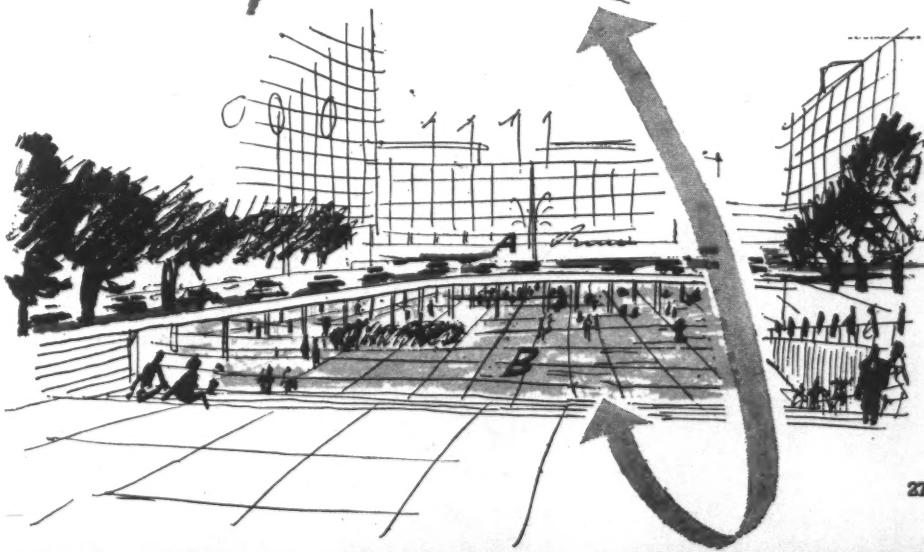
## 2a Vertical (underpass & subway)



25



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27

The basic principle of this type of segregation as outlined on page 322 assumes the retention of the traffic at ground level and the provision of a lower pedestrian level free from traffic.

Like any other method of segregation its success depends on how attractively the scheme is designed and how convenient it will be for the pedestrian to use. The present *Piccadilly Circus* 25, is a familiar example of the basic pedestrian underpass, but it doesn't work either visually or practically. Few use the subways to cross the streets (only for getting to the underground station); preferring to risk the traffic. There is a definite resistance to using an underpass, but much depends on how the entry points are designed, 'Rabbit holes' as provided in Piccadilly are definitely not the solution. The stairs are dark, and once below street level orientation is lost.

*Vienna's Opernpassage*, in contrast to Piccadilly Circus, is a great success. The entrances designed as elegant glass boxes house escalators which carry the pedestrian effortlessly down from pavement to lower level. The subway itself is well designed, and brilliantly lit, with elegant shops and cafés.

### ***Sergels Torg, STOCKHOLM***

*T. Westman, D. Helldén & G. Lindman*

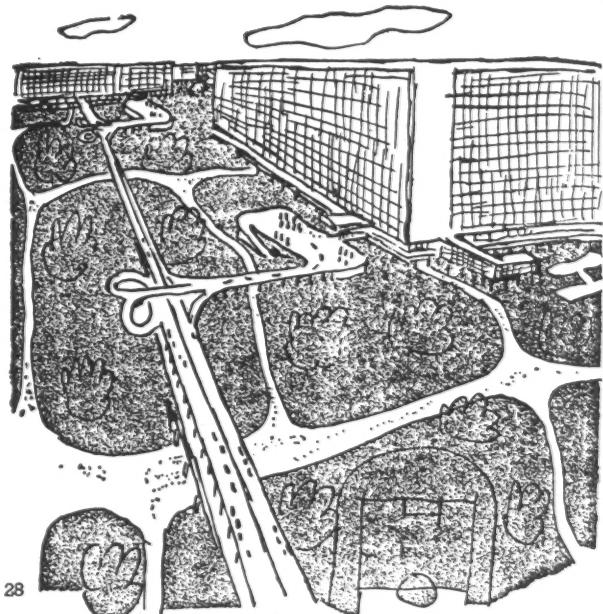
An even more ambitious underpass scheme is now under construction in Stockholm, 26. The large traffic roundabout *Sergels Torg*, A, immediately adjoining the *Hötorg* area on the south (facing page) is being built with an extensive pedestrian piazza, B, below road level. It is open to the sky, 27, and designed as a public gathering space with shops, while a top lit restaurant is placed under the actual roundabout itself. People arriving by underground at the major 'T-centralen' station will emerge directly from the ticket hall on to this lower piazza. The roadways are on stilts and the traffic almost invisible from below. By escalator pedestrians will be able to reach the upper level and the pedestrian Precinct or *Hötorg*. The designers of this scheme have realized that it is not enough just to provide segregation; it must be attractively done so that it can become a valid contribution to the townscape.

## 2b Vertical (elevated roads)

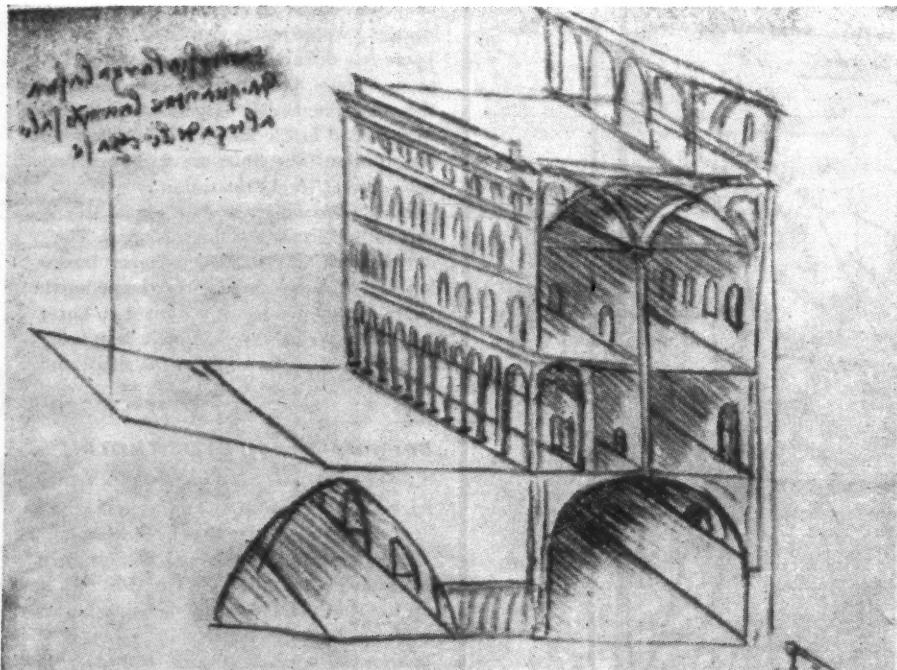
### PROJECT

Le Corbusier

Separation of men and machines, coupled with the skyscraper housing unit set in a park, has been a recurring theme in many of Le Corbusier's projects. Even in his early schemes he introduced complete segregation; a revolutionary idea at the time. Roads and buildings were elevated on stilts and the ground given over entirely to the free movement of the man on foot, 28. This is still an exciting conception but the doubt remains as to whether such unlimited acreage of parkland might not prove monotonous.



28



29



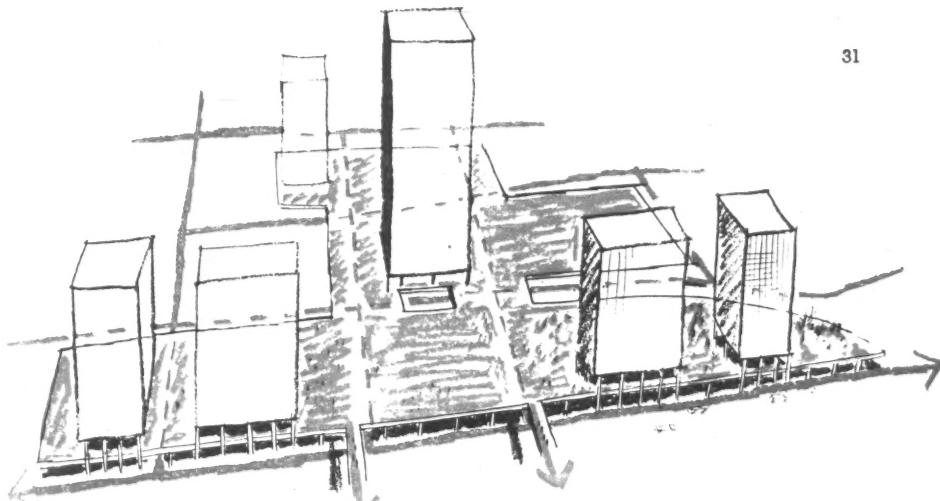
30

## 3 Vertical (pedestrian deck)

The Radburn principle, precinct planning and segregation by subway are now recognized methods. However, the other kind of vertical segregation with pedestrians moving above the traffic, has yet to be generally accepted. This is in spite of its obvious advantages in tightly built-up areas. There have been many projects, but few have much chance of being realized. In this country the most advanced scheme so far, with elevated walkways providing total vertical segregation, is that for the Barbican Area of the City of London.\* This scheme is now building, but it will be some years (probably 1968) before its success can be estimated. Again, the recently published proposals for Piccadilly Circus by Sir William Holford accept that vertical segregation has become essential. We find, perhaps not surprisingly, that its advantages were realized by Leonardo da Vinci, as his sketch 29 shows. In this ground level is kept entirely pedestrian and traffic tunneled below.

Venice, though not an exact parallel, gives promise, as Canaletto's drawing 30 shows, of the degree of freedom of movement which is possible for the pedestrian—a freedom denied in any other city in the world. Here all traffic routes (canals in this case) are crossed by bridges and there are separate networks for vehicle and pedestrian; the traffic route curving and equal in width, the pedestrian route angular, irregular, surprising, mansize.

\*see AR, May 1960.

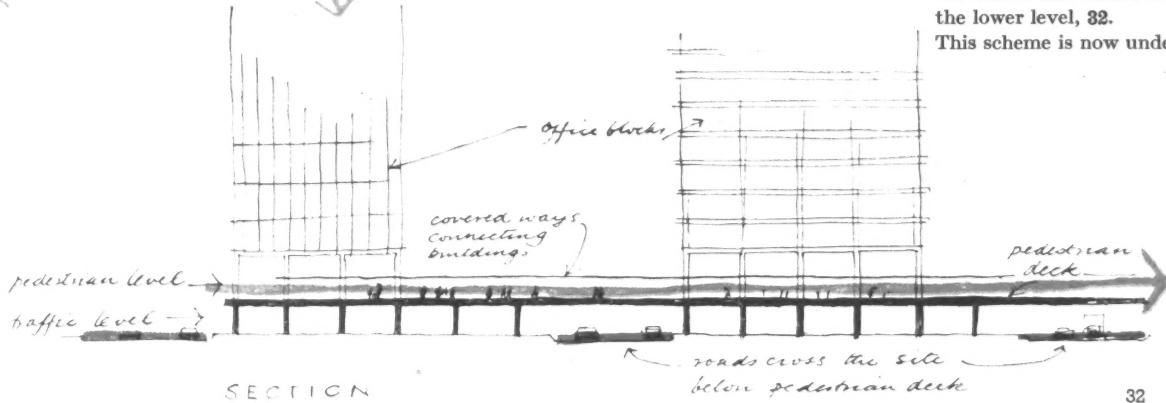


### **Fort Dearborn, CHICAGO**

*Skidmore, Owings & Merrill*

The Institutional Centre, 31, is part of the Fort Dearborn Project—a scheme for the redevelopment of 148 acres on the north bank of the Chicago River. The existing street pattern as well as the whole site is covered by a vast pedestrian platform from which rise tall glass and steel office blocks. Covered pedestrian walks link all the blocks and traffic remains entirely at the lower level, 32.

This scheme is now under construction.

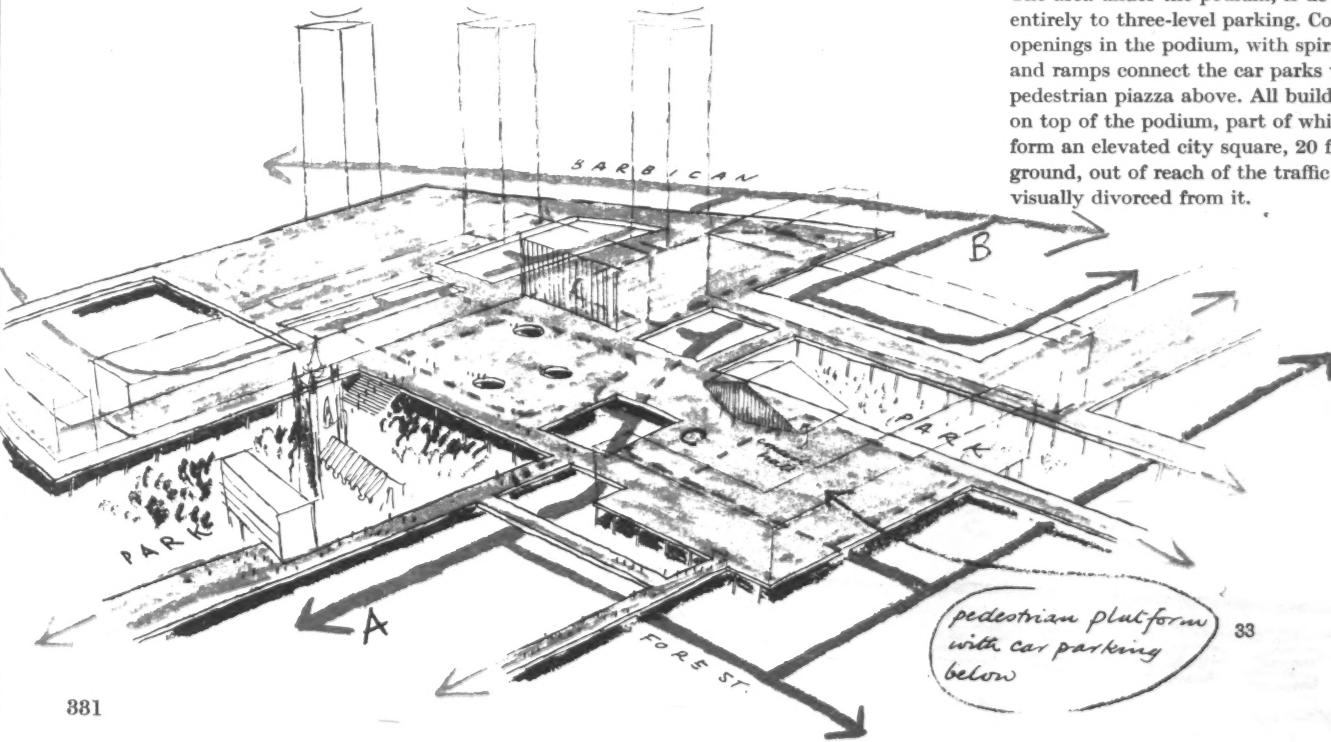


### **Barbican, LONDON**

*Henryk Blachnicki*

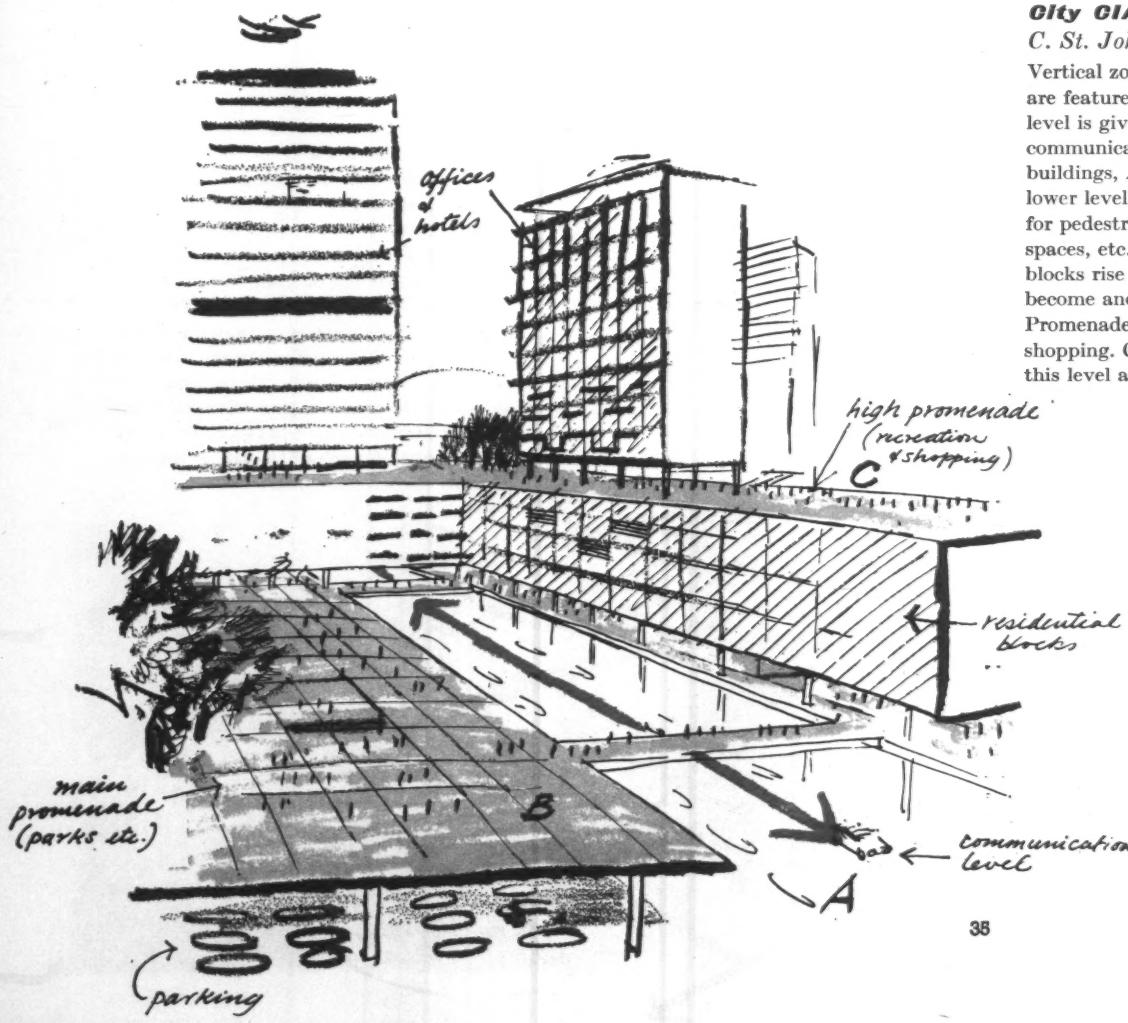
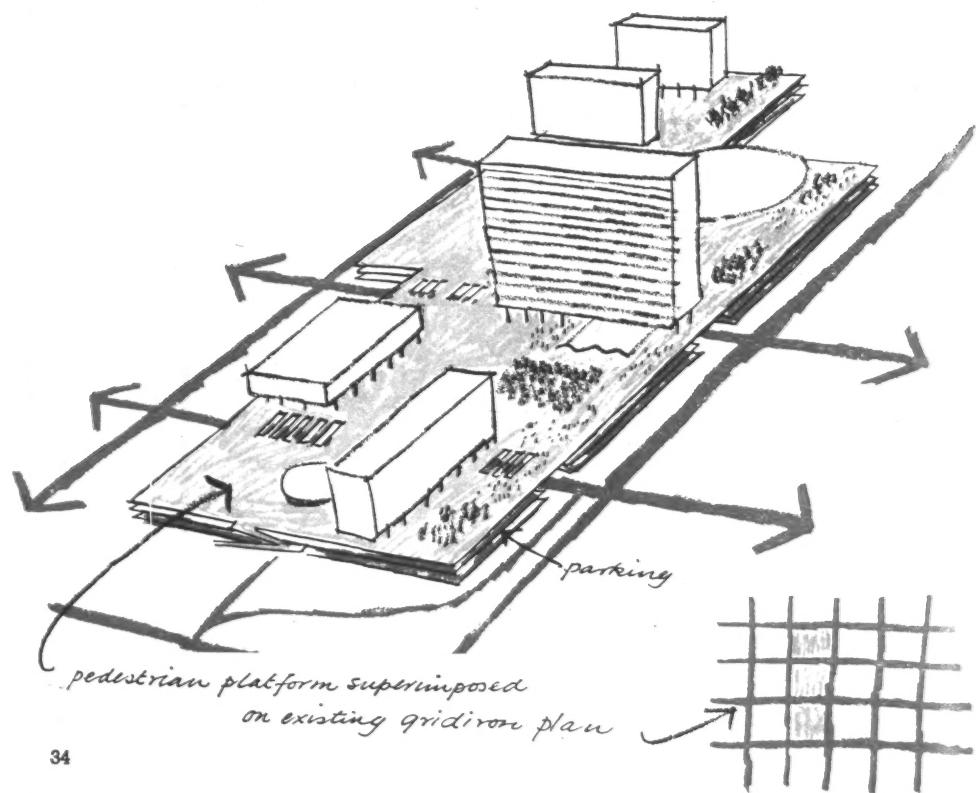
This is an alternative design for the residential area of the Barbican, 33, allowing for the total penetration of cars. It is in contrast to the Chamberlin,

Powell and Bon scheme, now under construction, which is designed as a two-level precinct. Here the streets continue in an extension of the city street pattern with a spine road, A-B, from which service roads run below a continuous pedestrian podium. The area under the podium, is devoted entirely to three-level parking. Covered openings in the podium, with spiral stairs and ramps connect the car parks with the pedestrian piazza above. All buildings are on top of the podium, part of which would form an elevated city square, 20 ft. above ground, out of reach of the traffic but not visually divorced from it.



**CINCINNATI**

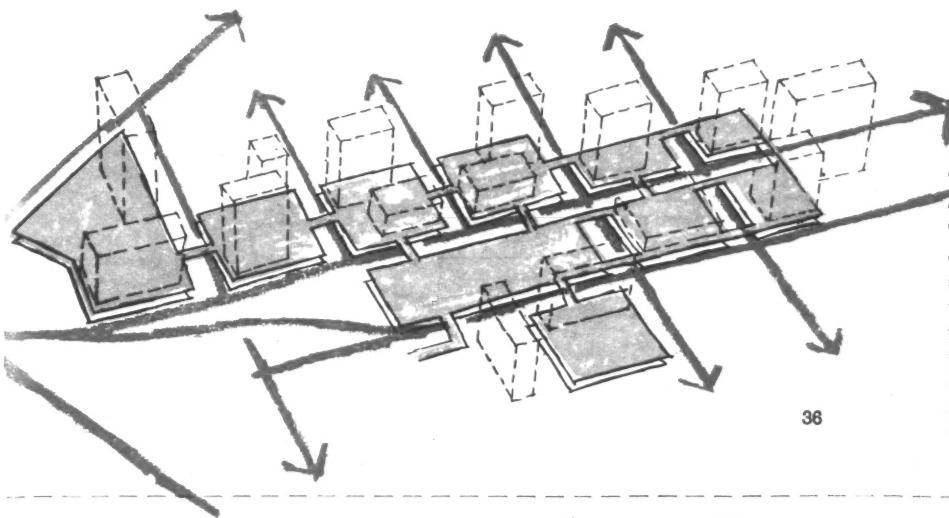
**J. A. Burdick & Otto Bauer-Nilben**  
 In this project a new civic centre is proposed, set on an extensive platform, in turn superimposed on the existing street pattern, 34. The platform structure rises two and three storeys above street level and is used for car parking. The roof is designed as a pedestrian piazza with planting, sculpture, etc. Openings in the slab are provided for ventilation and light to the through roads underneath. Although this is only a project its simplicity makes it readily applicable to many redevelopment schemes where the preservation of the street pattern is imperative.



**CITY CIAM PROJECT**

**C. St. John Wilson & P. Carter**

Vertical zoning and complete segregation are features of this proposal, 35. The ground level is given over to transport, communication, parking, and servicing of buildings, A. A platform covering this lower level becomes the main promenade for pedestrian circulation, for parks, open spaces, etc., B. Five-storey residential blocks rise from this level, and their roofs become another pedestrian deck, the High Promenade, used for recreation and shopping. C, High blocks rise again from this level as offices, hotels, etc.

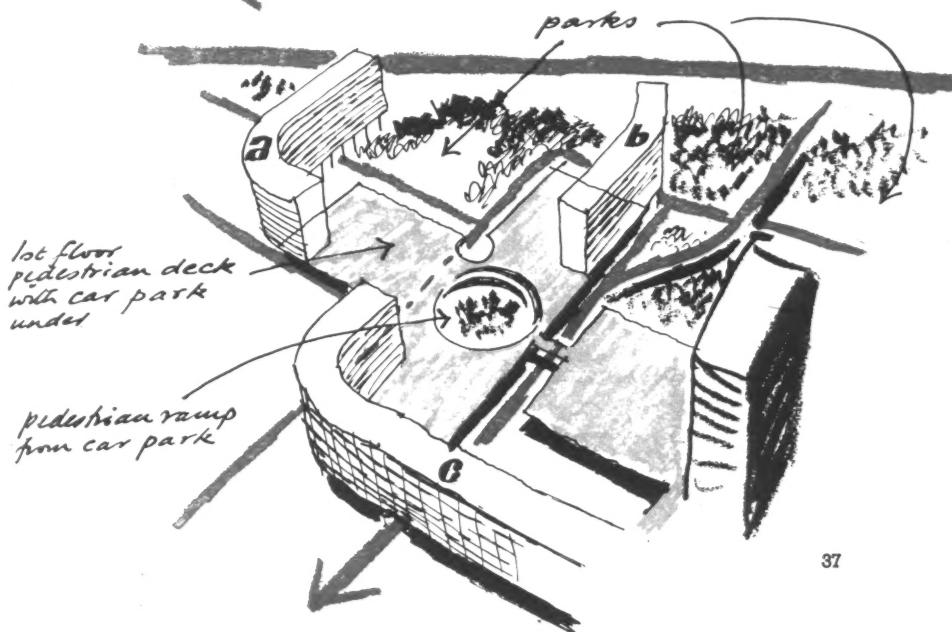


36

**SAN FRANCISCO**

*Skidmore, Owings & Merrill*

This project for the Golden Gateway area of San Francisco has been designed as a sequence of vast pedestrian platforms with shops, restaurants, gardens and promenades. Below are two and three level public garages. The pedestrian platforms are linked together by means of bridges spanning the roads, forming a continuous walkway system.



37

**SAN FRANCISCO**

*Skidmore, Owings & Merrill*

A scheme submitted by the same architects in the civic design competition of 1960 for the redevelopment of the Golden Gateway area, 37. Three curving residential blocks, a, b, c, on stilts stand partly on the ground and partly on the top of the car park structures. The roofs of these parking blocks are designed as a continuous pedestrian platform. By concentrating the vehicle circulation in one part of the area, and mostly under cover, it has been possible to create a landscaped park adjacent to the buildings.

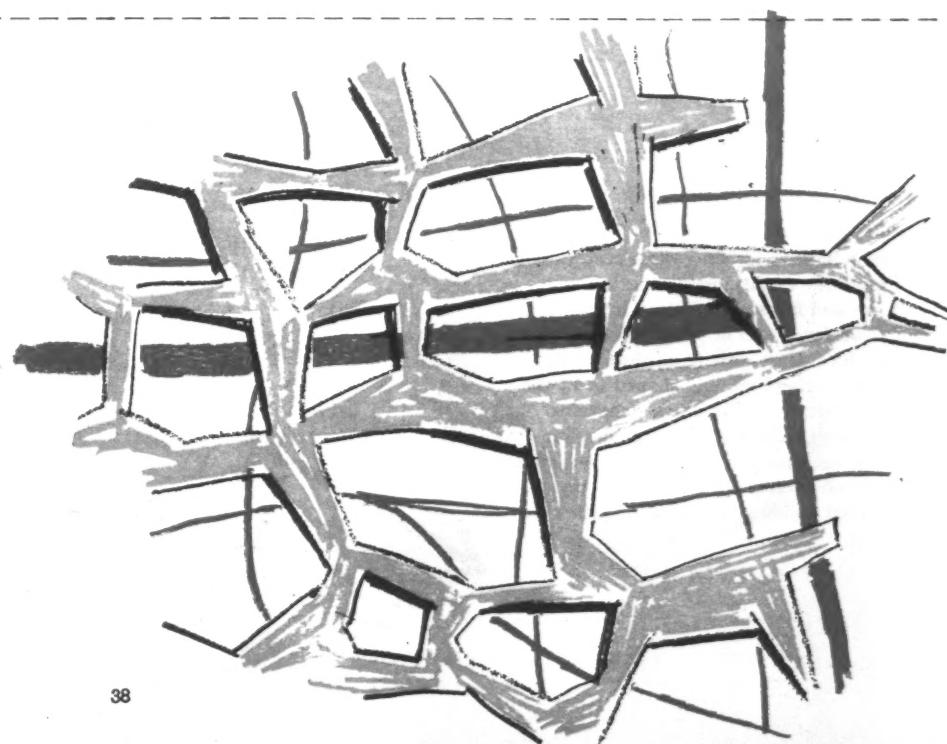
**BERLIN**

*Alison & Peter Smithson & Peter Sigmund-Wonke*

The international competition of 1958 for the reconstruction of Berlin produced several interesting segregation schemes, the four illustrated, 38, 39, 40, 41, showing a fresh approach to the problem.

The Smithson-Wonke solution, 38, is on two levels. Ground level is given over primarily to traffic and the street pattern reflects the curves most suitable for the machine.

By contrast, the roofs of shops form a continuous pedestrian platform 10 metres above ground which is an organic network of non-parallel, narrowing and widening routes expressing the movement of man.

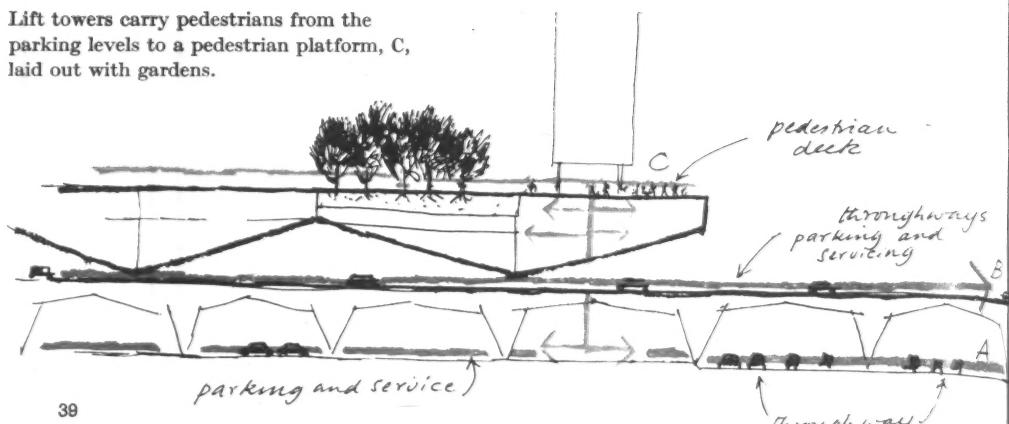


38

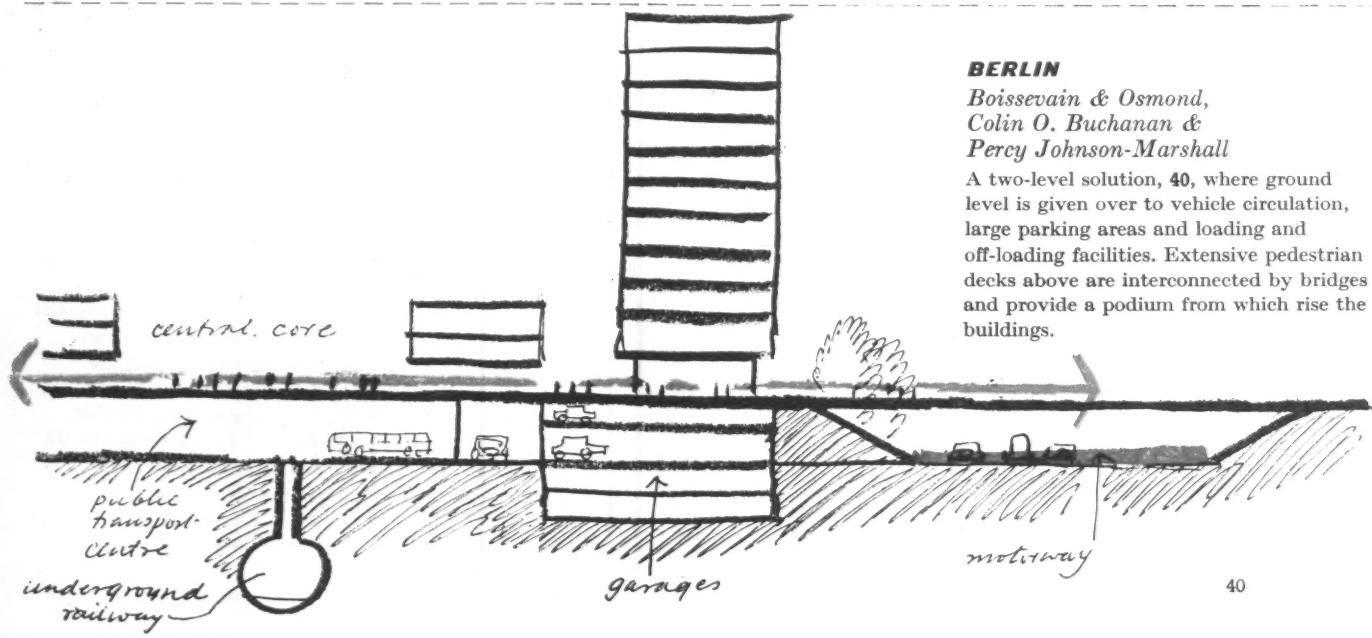
*Tournon-Branly, Devinoy, Faugeron & D'Auvergne*

This competition scheme, 39, caters for maximum use and parking of cars and allows complete interpenetration of central areas by them. Two levels are devoted entirely to vehicle movement and parking. On the lower level, A, the main network of roads runs in one direction and the subsidiary network runs at right angles to it; on the upper level, B, the run of roads is reversed creating in each case a two level crossing.

Lift towers carry pedestrians from the parking levels to a pedestrian platform, C, laid out with gardens.



39



**BERLIN**

*Boissevain & Osmond,  
Colin O. Buchanan &  
Percy Johnson-Marshall*

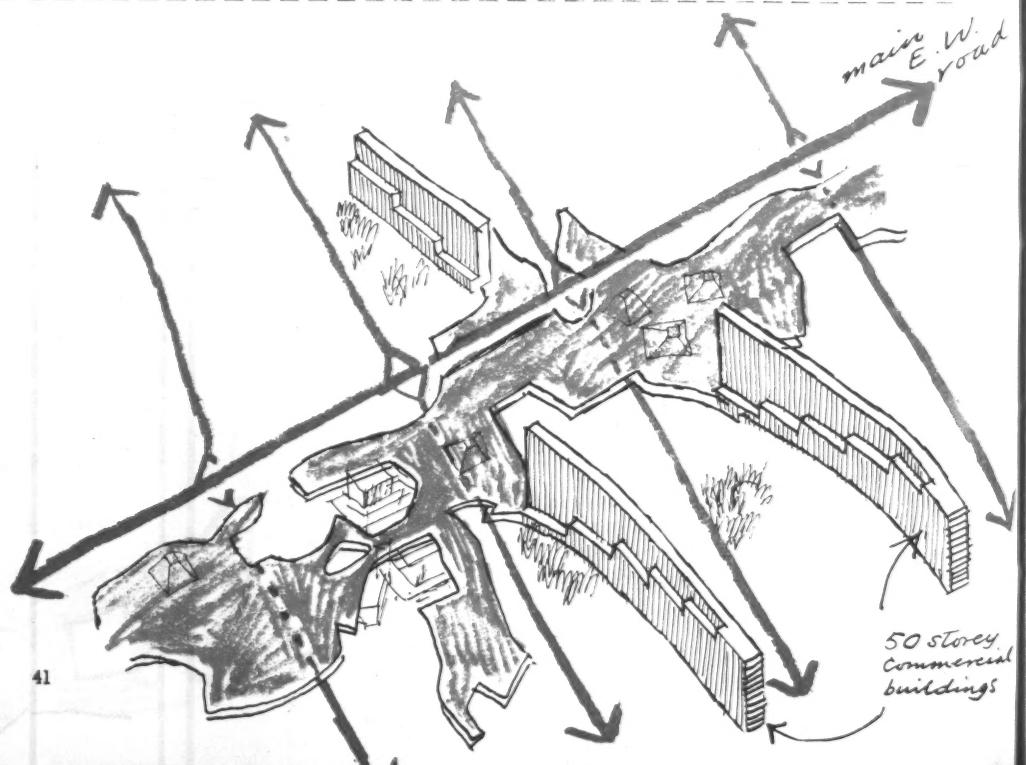
A two-level solution, 40, where ground level is given over to vehicle circulation, large parking areas and loading and off-loading facilities. Extensive pedestrian decks above are interconnected by bridges and provide a podium from which rise the buildings.

40

**BERLIN**

*Arthur Korn & Stephen Rosenberg*

A three-mile-long building three storeys high provides a continuous pedestrian platform and links all buildings by rising over main roads and in places ducking under the two level 'east-west throughway,' 41. This meandering building, shaped to fit the existing features and buildings, contains shops, offices, hotels, theatres, cafés. Some buildings are placed on top of this pedestrian platform and thirty-six and fifty storey commercial buildings are sited on either side of it.

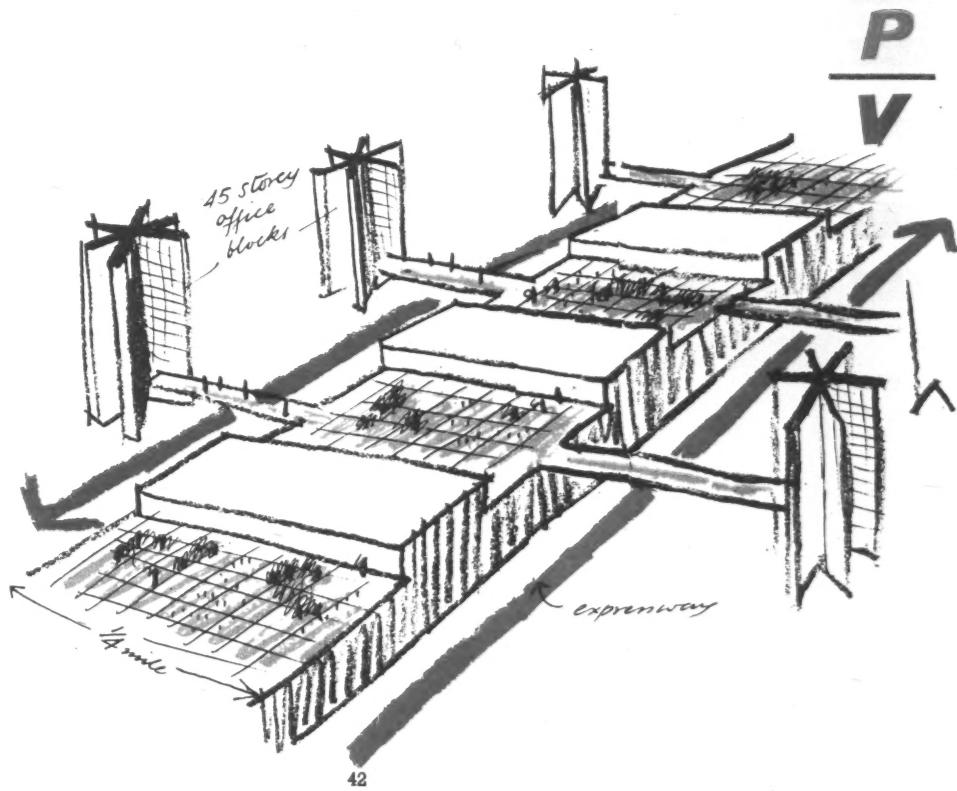


41

### **Metro-linear, USA**

*Reginald F. Malcolson*

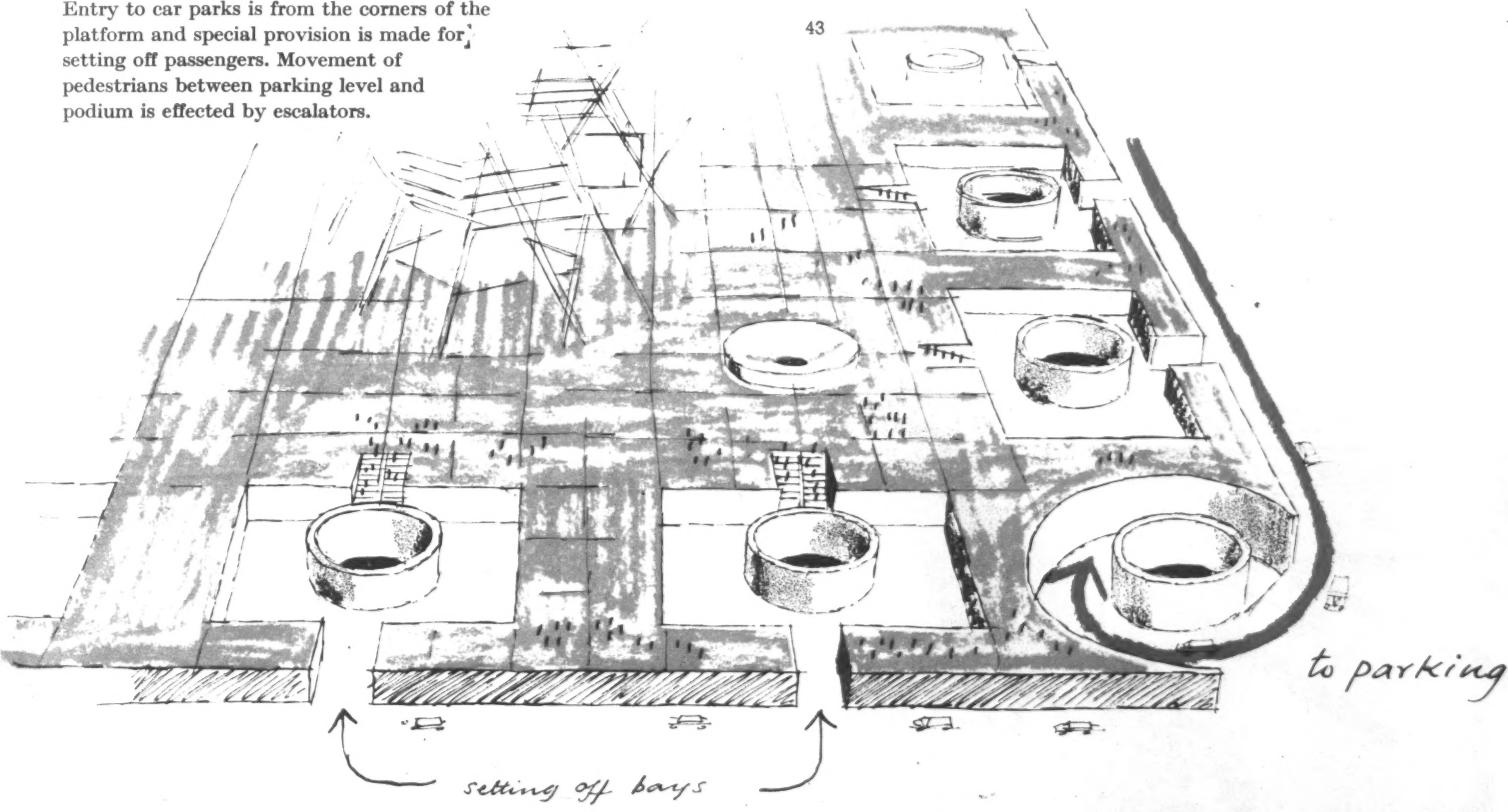
This concept, 42, visualizes in diagrammatic form a new kind of streamlined urban environment dictated by the motor vehicle. Single direction expressways, sited on either side of a  $\frac{1}{2}$  mile wide continuous four-storey car park building, cater for fast moving transport. The roof of this building is pedestrian territory with public commercial and cultural buildings rising from it. Covered pedestrian bridges, located at intervals, span the expressway and link with 45-storey star plan office blocks, sited at  $\frac{1}{2}$  mile intervals.

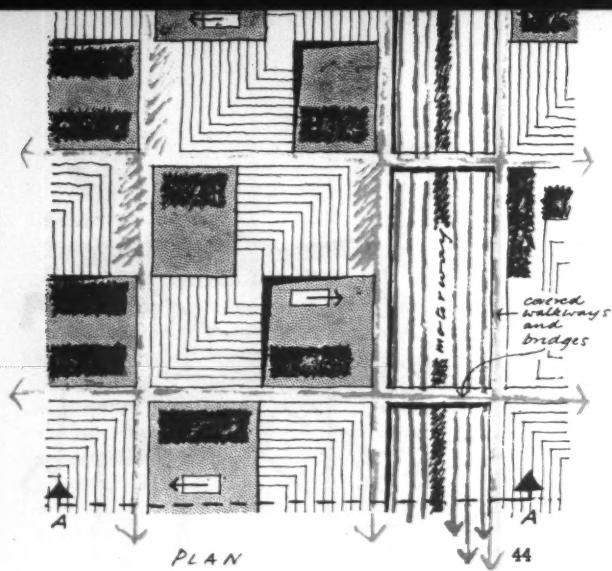


### **PHILADELPHIA**

*Louis Kahn*

This interesting project, 43, was developed as part of a replanning scheme for the centre of Philadelphia. The buildings stand on top of a pedestrian podium with car parking below. Entry to car parks is from the corners of the platform and special provision is made for setting off passengers. Movement of pedestrians between parking level and podium is effected by escalators.

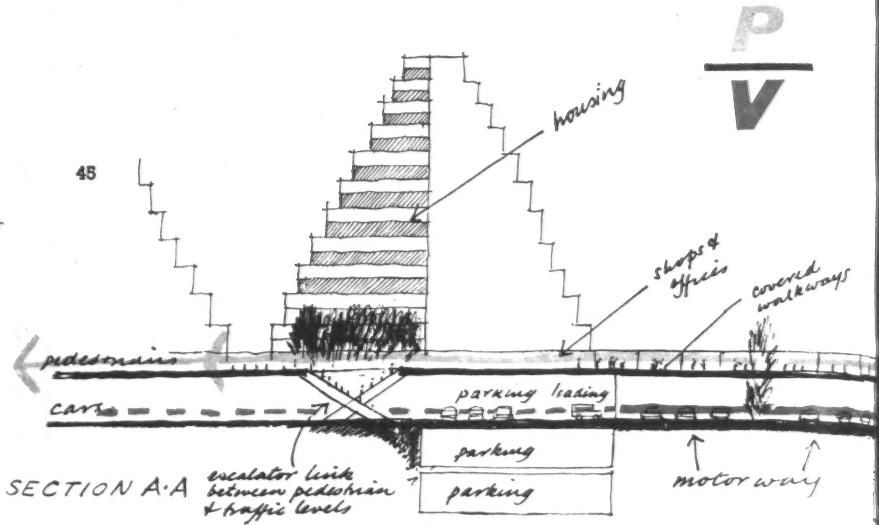




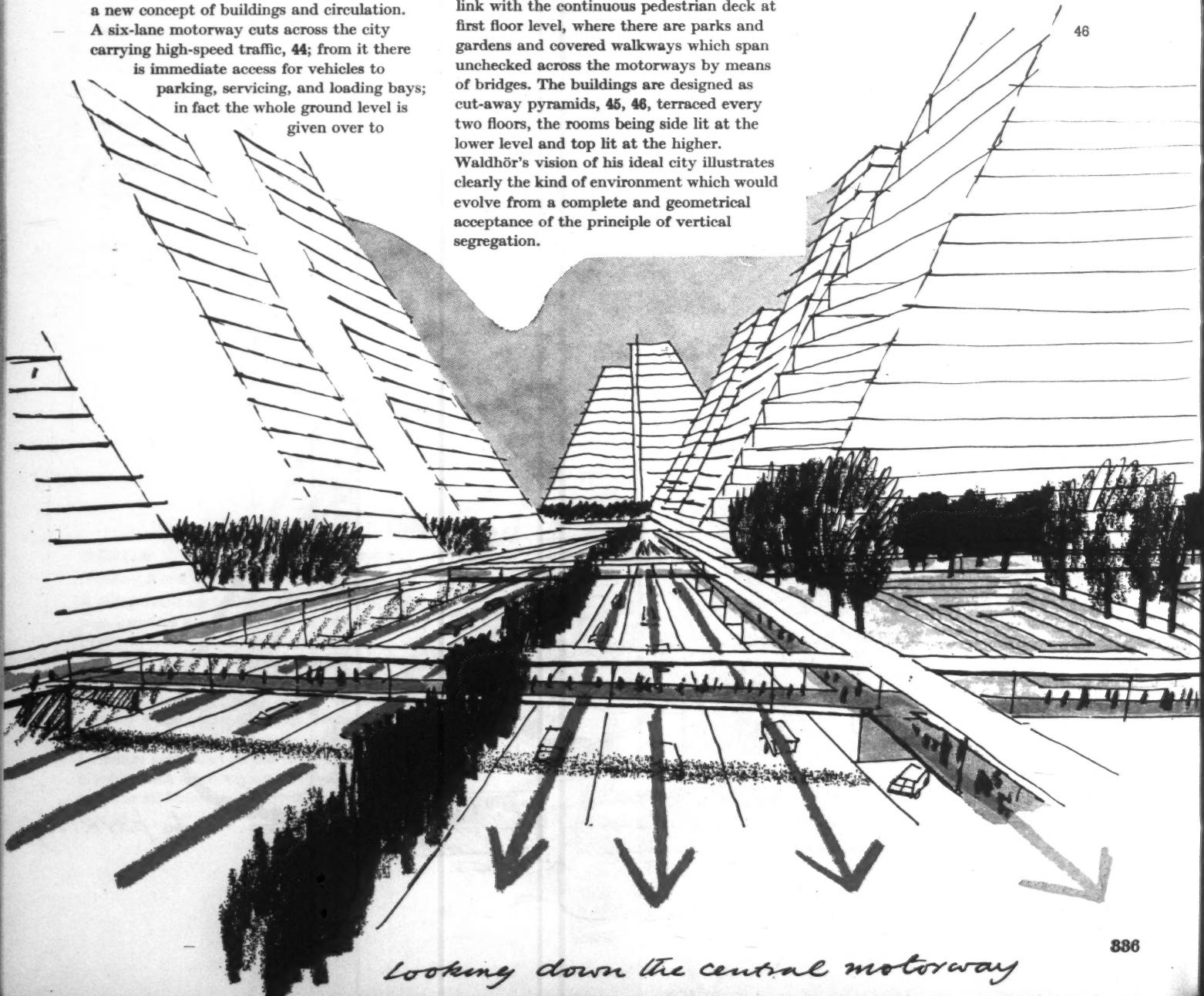
## CITY

### Ivo Waldhör

From an analysis of the problems of the modern city, the architect has here evolved a new concept of buildings and circulation. A six-lane motorway cuts across the city carrying high-speed traffic, 44; from it there is immediate access for vehicles to parking, servicing, and loading bays; in fact the whole ground level is given over to



vehicles, supplemented by several levels of underground parking. Lifts and escalators link with the continuous pedestrian deck at first floor level, where there are parks and gardens and covered walkways which span unchecked across the motorways by means of bridges. The buildings are designed as cut-away pyramids, 45, 46, terraced every two floors, the rooms being side lit at the lower level and top lit at the higher. Waldhör's vision of his ideal city illustrates clearly the kind of environment which would evolve from a complete and geometrical acceptance of the principle of vertical segregation.



## Gown Shop in Nottingham

Architects:  
Diamond, Redfern & Partners

A display area and show-window, with fitting rooms and staff accommodation behind, inserted into an awkwardly-shaped existing space that narrows down to the width of a single corridor in the centre, the continuity of the planked wall surfaces establishing a connection between front and back.

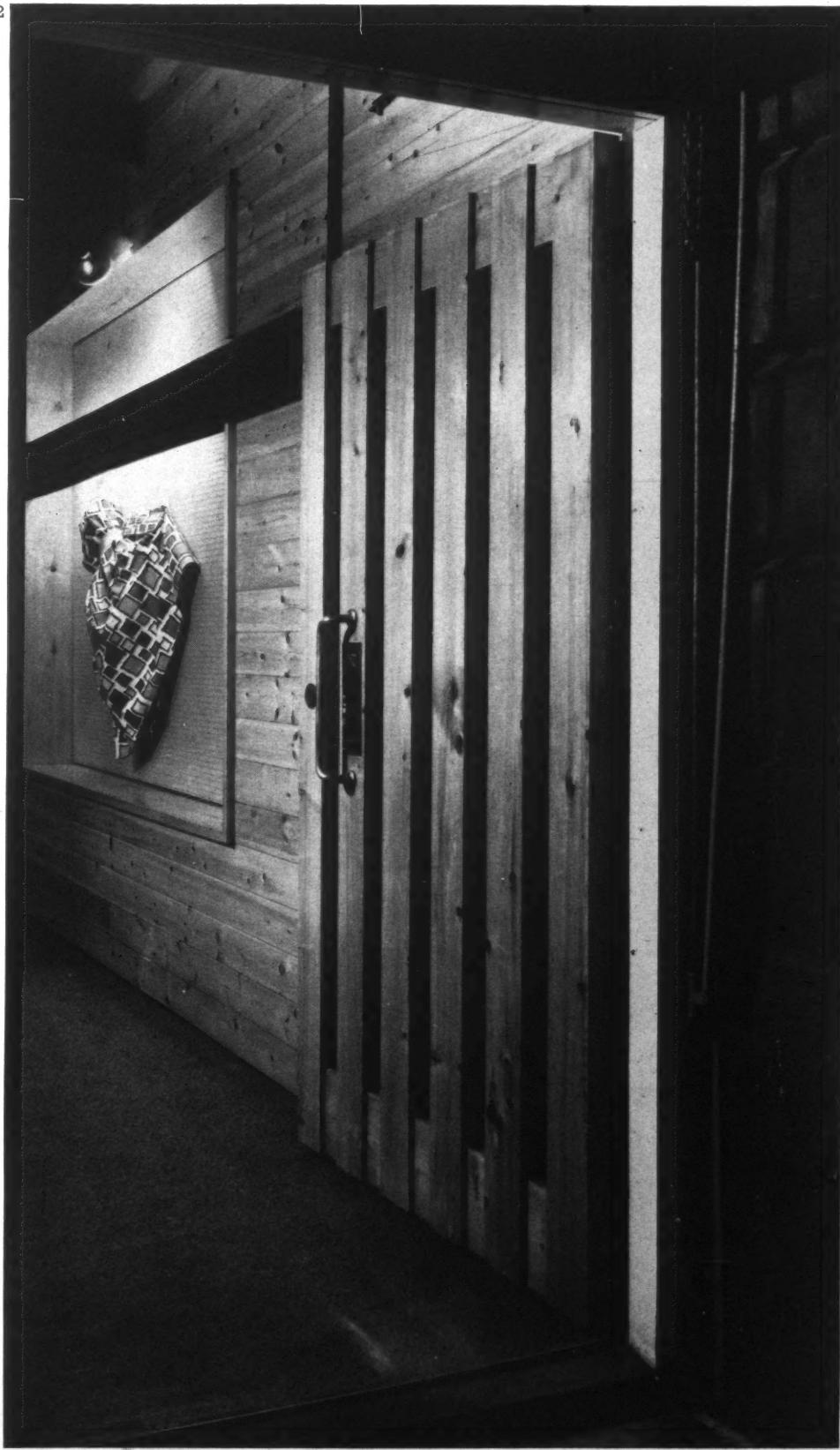
1



1. the exterior seen from the street. A single sheet of glass forms the bulk of the façade, rilled to carry the cut-out lettering of the shop name, and framed in a simple white surround. The rest of the front consists of door (see 2) and opening light above.

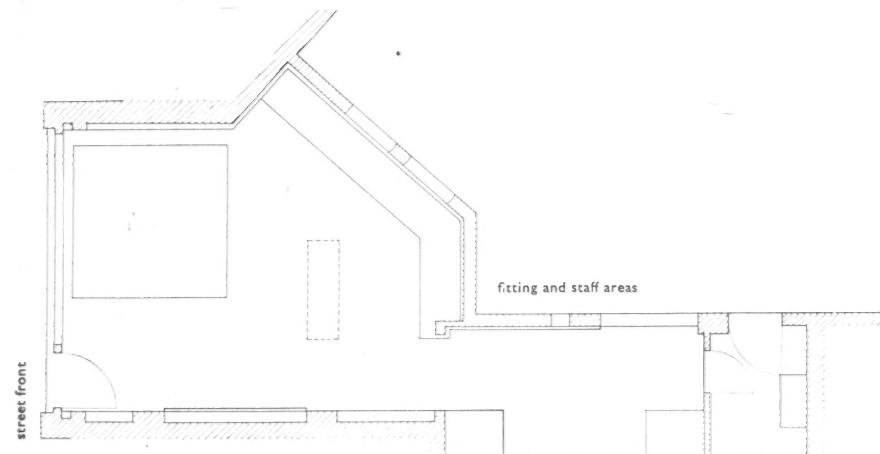
2. the street door shown open. Like the light above, it consists of alternating strips of glass and varnished soft-wood slats, the wooden theme implying a degree of unity with the interior and disassociating the shop front from the given architecture that surrounds it—a sample of rustication appears far right. The door furniture is in brass.

2



3, looking toward the street from the central corridor (see plan right). The dome-headed bolts securing the white-painted lettering to the window may be seen, as well as the two beams carrying spot-lights over the display area. The continuity of the front and back areas of the shop is maintained not only by the consistently planked walls, but also by the black strip, two boards deep, that runs right round the whole scheme, and the grey carpet which is common to all parts of the shop.

3





**Gown Shop  
in  
Nottingham**

**ID**

4, the display area, showing the raised dais in the foreground and the khaki curtains covering the hanging cupboards on the rear wall. The black continuity-band here becomes an upstand masking concealed fluorescent lighting, while at the extreme left the painted band is turned upwards to make visual contact with the spot-light 4 carrier beam nearest the window.

## **Bookshop in the City**

architects :  
*John & Sylvia Read*

Modernization of an existing bookshop in Old Broad Street, in the City of London, achieved without interrupting the use of the shop. Existing wooden galleries re-

moved and replaced by a new mezzanine floor, which—for reasons of head-clearance within the existing structure—was kept down to a thickness of only four inches by the use of pre-stressed, pre-cast concrete planks, with a structural topping.

1, looking down the staircase from the new mezzanine. The mahogany treads are carried on steel brackets cantilevering from a square steel box-beam, visible at left. The balustrade is of square section steel tube enamelled in black, with cedar security panels and a black plastic hand-rail.

1



2, the exterior. The amount of window-space occupied by the blank wall of the mezzanine shows how critical was the matter of ceiling heights.

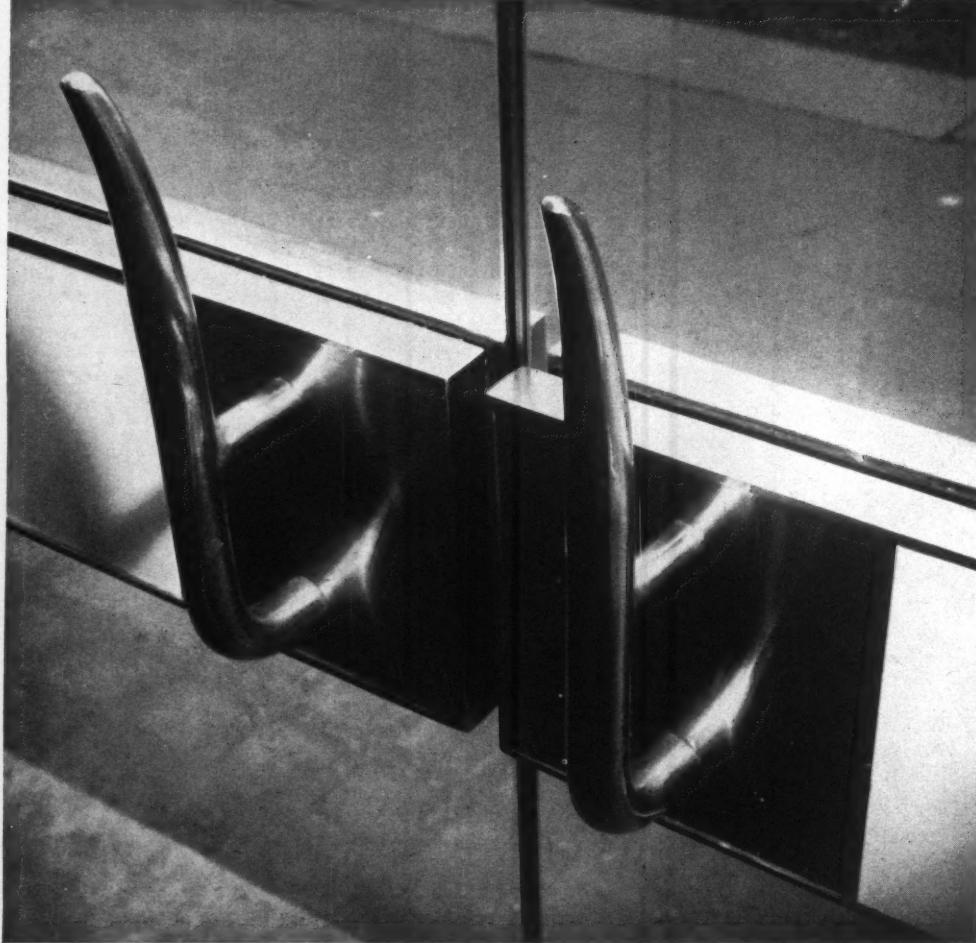
3, interior, showing one of the two sales counters flanking the stairs up to the mezzanine.

4, satin-finish stainless steel door-pulls on the street doors—the use of clearly visible pulls on one side of the doors, and nothing on the other, makes the mode of action of the doors clear, and saves tentative pushing and pulling.

5, external treatment of the doors, with the street numbers accommodated in the depth of the push-bar.



2 3 4 5



# BEATRICE WARDE

THE ARCHITECTURAL REVIEW has been in the game of vitalizing display typography for twenty-five years. The REVIEW is therefore the place to record the revolution in the design of book jackets which was carried out single-handed by the man who, in the minds of most, stands for the most impeccable traditional principles of lettering and layout.

Stanley Morison's entry in *Who's Who* starts off with the august initials FBA, and the forty-one lines that follow are tight-packed with academic honours, fellowships, and titles of historical and other learned publications. As an account of his achievement it is all true as far as it goes. He is indeed a Fellow of the British Academy, and the books and major articles listed (out of a bibliography which has now reached its 161st item) do indeed rank him as a leading authority on an astonishingly wide range of subjects. But where that printed record ends, there the fun begins.

For behind that austere composite-

picture of a learned academician there is another and more exciting one which you are left to piece together for yourself: that of the inventive designer and profoundly influential practitioner whose anonymous hand has been behind a whole series of revolutions and reforms affecting the look of the visible word in both hemispheres. The full-length record of Morison-in-practice has still to be fully compiled by those who know this part or that, and with no help from the subject himself. I have never known anyone so agile at side-stepping a credit-line, when it could possibly be assigned to some team or fathered upon some corporate entity.

# STANLEY MORISON: INNOVATOR

After many years as his colleague on the typographic side I look back with amusement to one of our early conversations, in which I incautiously referred to his 'medieval passion for anonymity.' That chronological cliché earned me an illuminating three-minute lecture on the nature and superstitions of the graphic arts in this twentieth century, with special reference to the fact that any man who 'has a name' for doing this or that thing well has a barrier-fence between his present success and any further and different thing that he might want to do thereafter.

Yes, but it all makes his biographers'

task—or at least that half of it which describes the Practitioner—rather like that of the detective who must keep fingering yards of panelling in the knowledge that any one of them might slide back to reveal an important clue. Even now, with all that was written and spoken about S.M. on his sixtieth and his recent seventieth birthdays, it is possible to point to some radical innovation that still waits for its fair appreciation. For example, there is ample material for an article on the significance of that pivotal volume of the *Penrose Annual*, 1923, in which a hitherto 'trade-bound' yearbook of technical progress in the graphic arts was suddenly transformed in appearance and endowed with the catholicity which has been its boast ever since. For a young and relatively unknown editor, the thing was a remarkable feat, in those days when 'art' and 'trade' still sounded, to the technicians, like the names of two different planets.

To take another example, it is a fairly open secret that Morison designed the most important new type-face of our century—the famous Times New Roman, one of the few obviously-permanent contributions to industrial design that have come out of England in our generation. But in the adjacent field of handwriting—the only one of the graphic arts which

John Citizen as such is able to practise every day of his life—you will not find one in a thousand of the joyous converts to Italic Hand, here or in America, who has yet realized what that significant reform owes to S.M.'s pioneer example and guidance to professional teachers of calligraphy, from the early 'twenties onwards.

And the foregoing are only a few of the lively facts that begin to crop up when you turn from the published *Who's Who* to consult the unwritten What's What of those modern arts which have to do with the visual transmission of ideas. To try to make Morison into a synonym for 'traditionalist' (with its audible undertone of 'hide-bound') would be comically misleading: for it would be an attempt to force into the pigeon-hole of conservatism a man who has in fact been successfully upsetting more different conventions, and introducing more lasting innovations, than any other living designer of the printed word.

In typography, it is most unusually hard to do anything for the first time, and make it stick. Most of its conventions have been established by centuries of trial-and-error practice, and shaped to fitness by the reader's driving need for Recognizability. Anyone who hopes to innovate must look for some fundamentally wrong-headed notion that has crept in when no

one was looking, and has begun to acquire the respectability of unchallenged custom. In the most entertaining example that I can think of, the one which is illustrated on these pages, the thing which was superseded was not being condemned as ugly, but brushed aside as irrelevant and illogical. Morison joined the publishing firm of Victor Gollancz and in 1929 turned a penetrating eye upon its book-jackets. They were pleasant-looking examples of decorative art; some had displayed the genius of McKnight Kauffer. Morison, characteristically, looked through those specifics and down to that core-of-the-sphere where instances converge into general principles. He saw nothing there to offer him any real reason 'why' (as he said) 'a man who was approaching a new book, with any curiosity about its contents, should be fobbed off with a picture on the jacket.' Off went the picture, in came the wholly-typographic jacket—with a bang that shook the whole book trade: for this was no chaste retreat from the emotionalism of the poster-artist to the elegancies of conventional displayed-lines. The newcomers had to induce readers to start reading print: but they also had to out-do their predecessors at the game of compelling attention. They did so by a series of uninhibited typographic audacities which first set the booksellers clucking

**W**

a novel

**TRY THE SKY**

by

**FRANCIS STUART**

author of

**THE COLOURED DOME**

**and PIGEON IRISH**

“I have already offered in print my homage to Mr. Francis Stuart's genius, and now, after reading *Try the Sky*, I am proud to think that my name may be associated, be it in never so humble a way, with a work of the most profound spiritual importance to the modern world.”

—from Compton Mackenzie's Foreword

**W**

**The FIERY DIVE**

STORIES BY

**MARTIN ARMSTRONG**

Coming after *St. Christopher's Day* (which had a unanimous success with critics and public alike) Martin Armstrong's last novel, *Sleeping Fury*, received what is known as a "mixed" reception. Its success with the public was even greater than that of *St. Christopher's Day*; but while many critics of authority considered it his finest piece of work, others of no less authority attacked it with a vigour which was itself a compliment to Martin Armstrong's artistic stature.

About the present volume of short stories there can, we think, be no such difference of opinion. Whether in the subtle psychology of the *Fiery Dive* itself, or in the remote, sun-bitten, austere atmosphere of the legendary *St. Hercules*

*Continued on first flap*

# THE intelligentsia OF GREAT BRITAIN BY DMITRI MIRSKY

(*ci-devant Prince Mirsky*)

including estimates of

**Bernard Shaw**

**H. G. Wells**

**J. M. Keynes**

**G. K. Chesterton**

**Bertrand Russell**

**D. H. Lawrence**

**Aldous Huxley**

**Virginia Woolf**

**WYNDHAM LEWIS**

Middleton Murry

&c. &c.

**Eddington**

**Jeans**

**Cole**

**E. M. FORSTER**

**Lyton Strachey**

**T. S. Eliot**

**Dean Inge**

**Laski**

**MALINOWSKY**

We (the publishers) ask our friends to forgive us:  
we don't agree with **everything**

**Prince MIRSKY** says. 

3, another jacket by Stanley Morison, reproduced slightly smaller than original.

with dismay, and in due course reversed the complaint into that of Unfairness to the Other Publishers, whose prettily uninformative jackets were being sorely handicapped at the sales-counter. The Gollancz-jacket possibilities were mischievously explored to the limit by Morison in those first few years, and then tossed-over into the capable hands of Ernest Ingham, of the Fanfare Press. Mr. Ingham, with the right instinct of an archivist, presented a complete file of his own excellent paraphrases of the Morisonian Impudence to Dr. John Johnson for his museum of ephemeral typography at Oxford; but to locate any copy of one of the original ground-breakers I was reduced to offering

tempting rewards to searchers in second-hand bookshops, or the shelves of now-middle-aged Left Book Club stalwarts. I am still in the market for those pre-1934 *rarissimi* of stunt typography, with a number of known collectors ready to bid against me; for quite a few of those reckless stunts went bouncing out from the violently-yellow paper on which they first appeared (with or without an arrogantly-magenta second colour) and began long careers of attention-snatching in national advertising displays.

The '72-point Quote,' still the most dramatic way of signalling 'Just see what we're able to quote,' made its first spectacular appearance in a Gollancz adver-

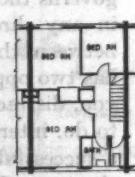
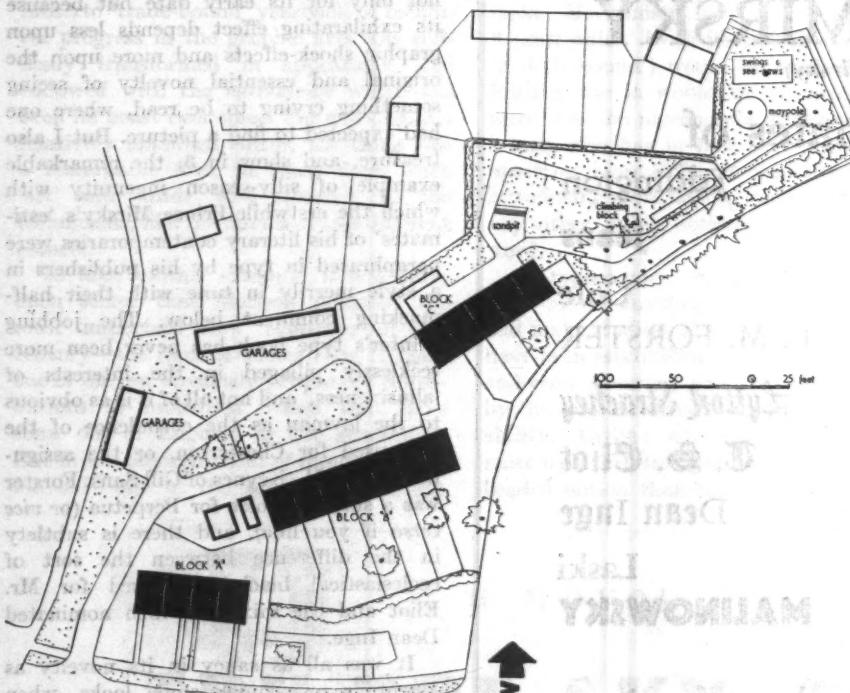
tisement designed by S.M. for the Times Literary Supplement. Its smaller brother can be seen in 1, with its prongs hooking your interest to what Compton Mackenzie said about Francis Stuart's *Try the Sky*. The 'fist' which jerked readers over to the inside-flap was another shocker for its day; and there is a neatly casual touch of the haywire at the top, where 'a noveL' puts its capital letter on backwards.

I was specially grateful to the scout who brought in an almost mint-clean copy of *The Fiery Dive* jacket of 1929, 2, not only for its early date but because its exhilarating effect depends less upon graphic shock-effects and more upon the original and essential novelty of seeing something crying to be read, where one had expected to find a picture. But I also treasure, and show in 3, the remarkable example of silly-season ingenuity with which the erstwhile-Prince Mirsky's 'estimates' of his literary contemporaries were paraphrased in type by his publishers in a style merrily in tune with their half-mocking comment below. The jobbing printer's type book has never been more recklessly pillaged in the interests of 'allusiveness,' and not all of it is as obvious to the layman as the corpulence of the face used for Chesterton, or the assignment to J. M. Keynes of Gill Sans. Forster was a shrewd choice for Perpetua (or *vice versa* if you like), and there is subtlety in the difference between the sort of ecclesiastical black-letter used for Mr. Eliot and the mixture which nominated Dean Inge.

It was all as saucy in its novelty as Morison's own quick smile looks, when it curves his normally sombre mask into the face of a twenty-years-younger man. It was rash, and it worked with all the unexpectedness of a thing done at random. And yet you could never call it 'unprincipled.' To find its connection with anything commonly called 'Morisonian' you have to go back to what I think of as his first principle of all: the one which governs the very first step of his reasoning in any direction: 'One must distinguish between things that differ.' Typography has two opposite roles to play. It can stop you, distract you from what you intended to do, interrupt your train of thought—as a successful display-line does in an advertisement. It can also coax you on, and imperceptibly guard you from distractions in uninterrupted reading. Any choice of type-face or style which is effective in one role is bound to be lamentably inefficient for the opposite sort of thing. Morison starts there, proceeds by reasoning, tests by evidence. And that power to 'distinguish' enables him to spot false associations which too easily confuse the rest of us.

# **current architecture**

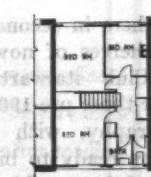
from all of history, whether new or old, Indian books as in Indian order.



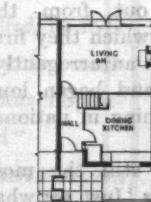
#### First floor plan



ground floor plan  
BLOCK A



First floor n.



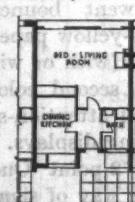
**ground floor plan**



#### Second Examples



Frontiers



ground floor plan

## HOUSING, ABBOTS Langley ARCHITECT, ERNÖ GOLDFINGER

In the grounds and on the site of a derelict Regency building with beautiful beech, chestnut and sequoia trees, which have all been preserved in spite of the local planning authority's suggestion that they should be cut down and the site developed with semi-detached houses. The development consists of 28 dwellings in three blocks, 15 lock-up garages for cars and six for motor cycles, etc., as well as a children's playground to serve these dwellings and some other council houses belonging to an earlier scheme.

Block A (see site-plan) is a terrace of four houses set back from the main road with rear access. There is a small garden in front of each house and a yard in the back. Block B consists of 14 maisonettes. Those on the ground floor have their own gardens and are approached, like the terrace houses, from the rear. The upper maisonettes (2nd and 3rd floors) are approached by an independent staircase. There is a separate building for pram stores and dustbins. Block C consists of five flats for old people on the ground floor with, over these, five maisonettes identical with those in block B. They have a bed-sitting room, kitchen and bathroom. All the maisonettes and terrace-houses have a living-room, living-kitchen and three bedrooms, a bathroom and separate w.c. There are 23 dwellings of this type.

The four terrace houses (block A) are built in brick cross-wall construction. The roof is of grey concrete tiles. The roof structure spans the full 22 ft. between cross walls and is made of rafters on proprietary purling beams. The main and rear elevations of the buildings are faced with cedar boarding.

The construction of the maisonettes and flats (blocks B and C) consists of calculated brick cross-walls with second floor and roof of precast concrete. Intermediate (bedroom) floors are of timber. The end dwellings in blocks B and C are of brick construction providing the required wind stiffening. The roof finish is rock-asphalt.

The dwellings are heated by individual back-boiler fire-places which provide domestic hot water (which can be boosted or run, in the summer, by immersion heaters). The back boiler heats two of the upstairs bedrooms, the third bedroom being heated by electricity. Each block has a group television aerial.

The garages are built of brick and the larger ones have up-and-over doors of standard construction. Access to the smaller garages is by cedar boarded doors. The children's playground is laid out with a tricycle track, concrete climbing blocks, and underpass, stockades, sandpit and concrete drainpipes set vertically.

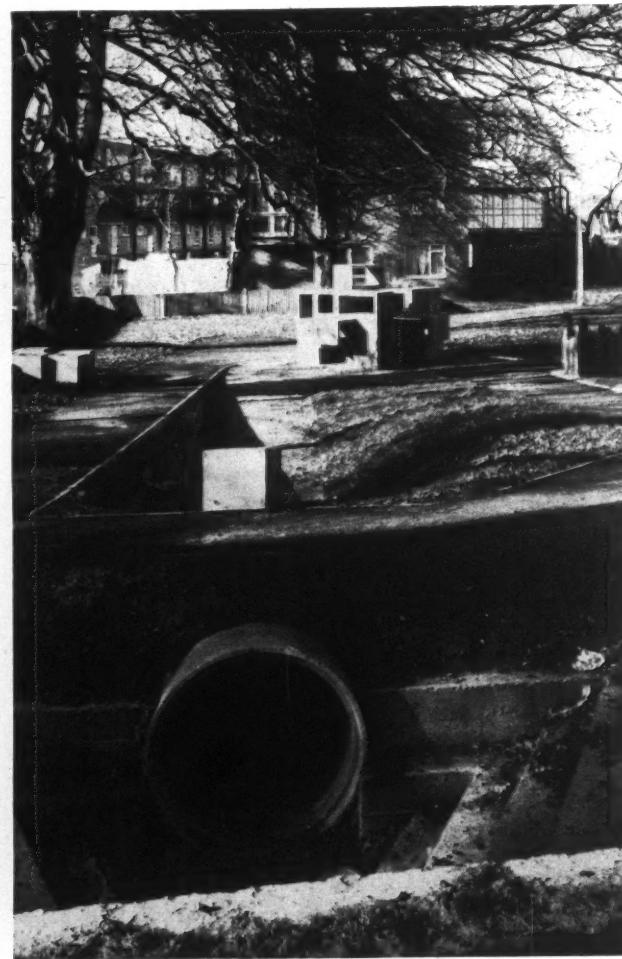
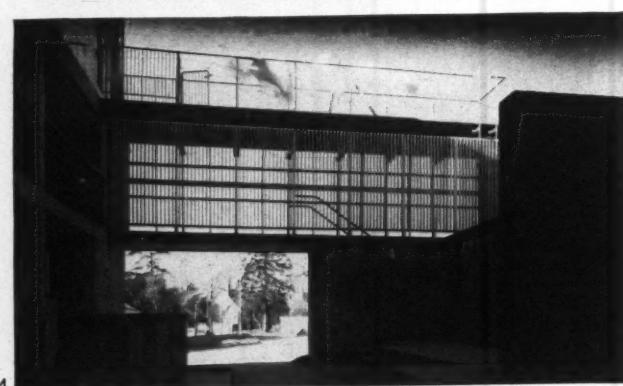


1

1, block A from the south-east. 2, block B from the south; on the left is the end elevation of block A.

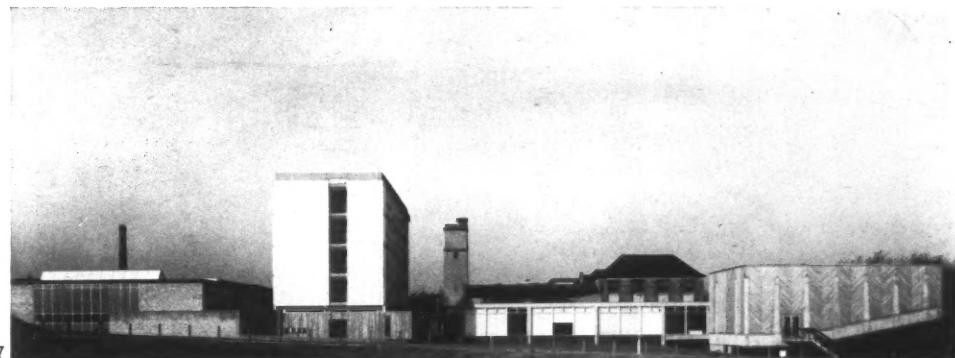
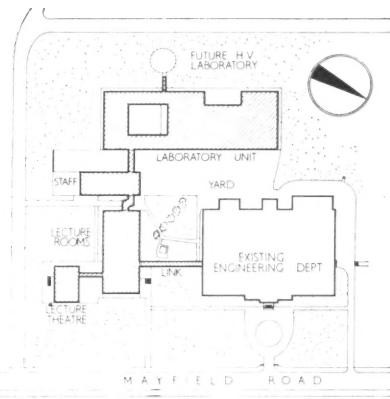


2



### Housing, Abbots Langley

3, the two maisonette blocks from the north-east; block B is on the left and block C is on the right.  
4, access gallery to block C.  
5, north elevation of block C.  
6, the children's playground in the north-east corner of the site; in the foreground is a crawling pipe and in the background are climbing blocks.



7

## ENGINEERING LABORATORIES, EDINBURGH

ARCHITECT: R. GARDNER-MEDWIN  
(in association with Stephenson, Young and Partners).  
Executive architect, W. Knight.

7, from the south. 8, the lecture theatre and glazed link from lecture-room block.

8

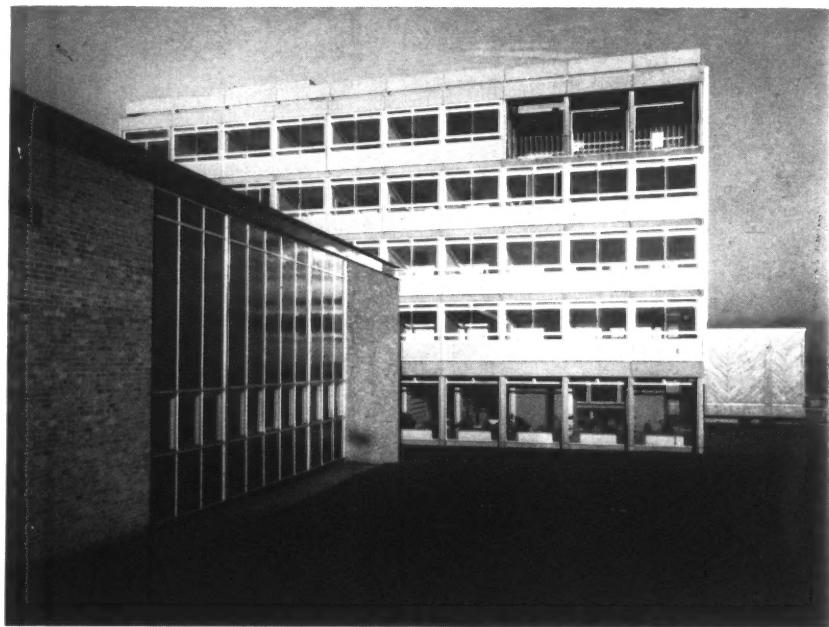
An extension to the University's Sanderson engineering laboratories, providing workshops and laboratories for electrical and structural engineering and teaching and staff accommodation for the whole engineering department. The sloping site is on the edge of the Braid Hills. The four main elements—laboratory block (two-storey), staff block (five-storey), lecture-room block (single-storey) and lecture theatre (raised above, and cantilevered from,



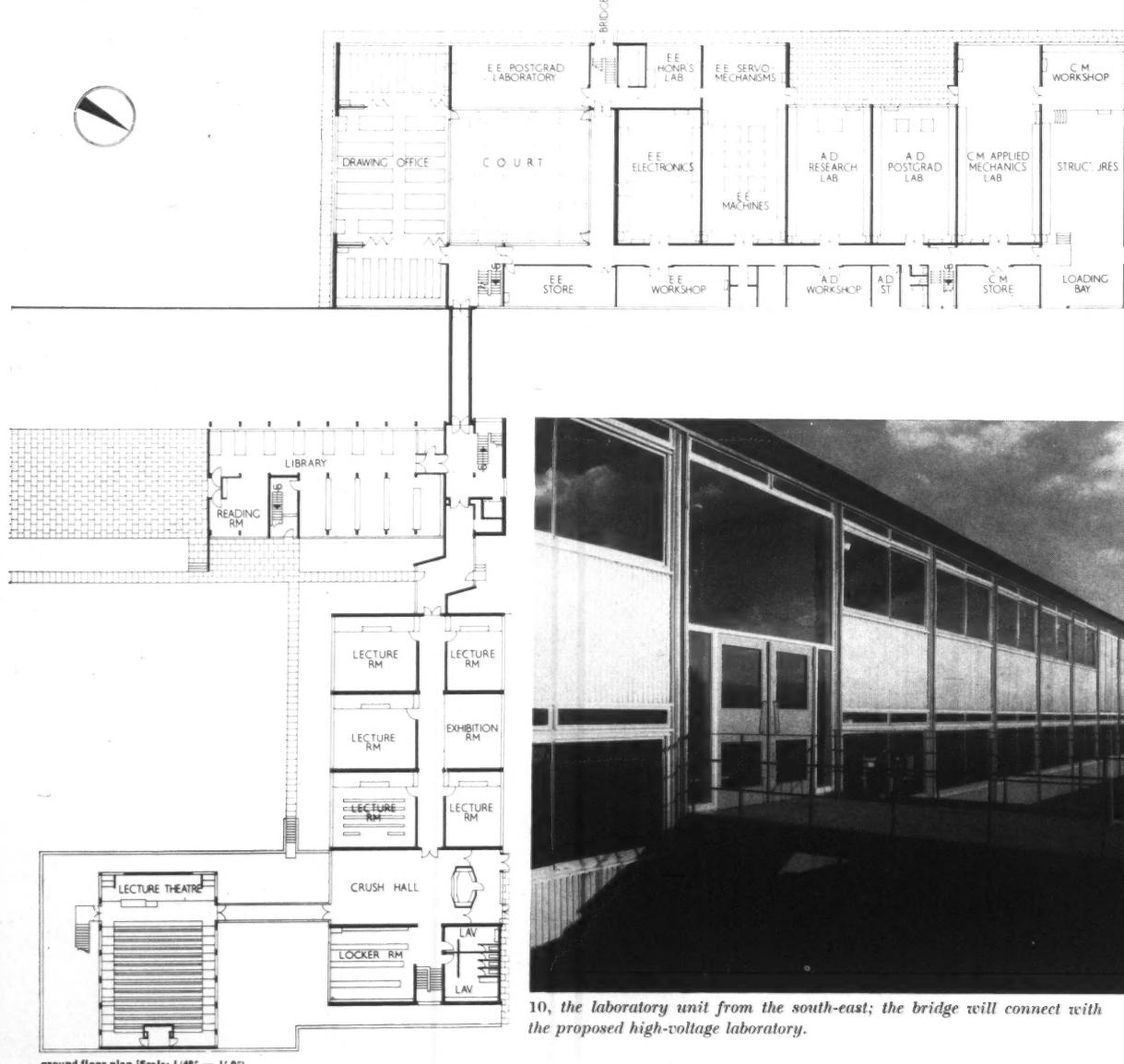
## Engineering Laboratories, Edinburgh

its air-conditioning chamber)—are linked with each other and with the earlier building by glazed covered ways or bridges (see site plan). Beneath one end of the lecture-room block, at the lower part of the site, is a students' common-room opening on to a sunken court in which the lecture theatre stands.

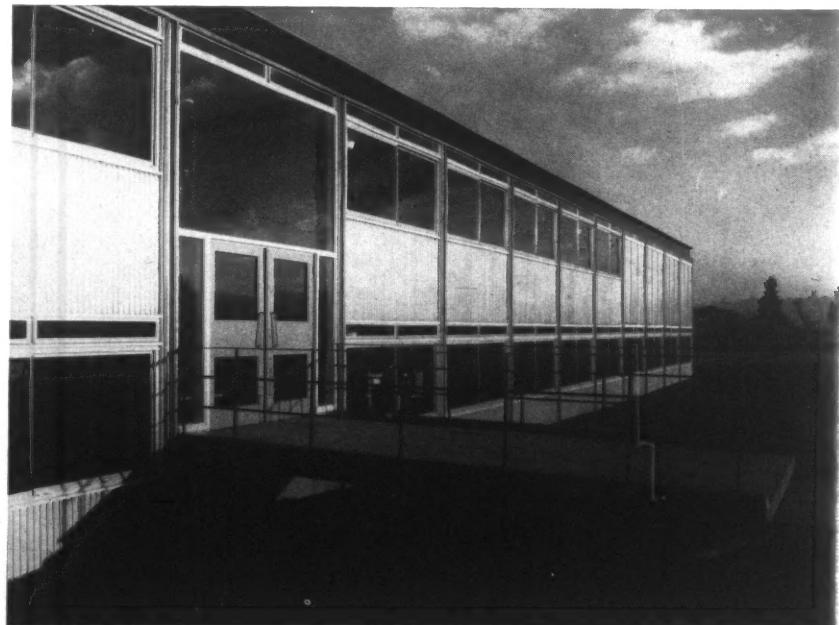
The laboratory block has an exposed welded steel frame with aluminium and plywood cladding, designed to be adaptable and expandable. The staff block has a reinforced concrete frame, partly prestressed, clad with brick at the ends and with grey enamelled steel window-panels. The lecture-room block is mainly a brick structure, and the lecture theatre is reinforced concrete, with the lower part exposed and the upper part clad with hardwood diagonal planking between portal frames. Constantly proportioned aluminium windows are used throughout the group of buildings.



9, the staff block from the south-west, with the drawing office on the right.



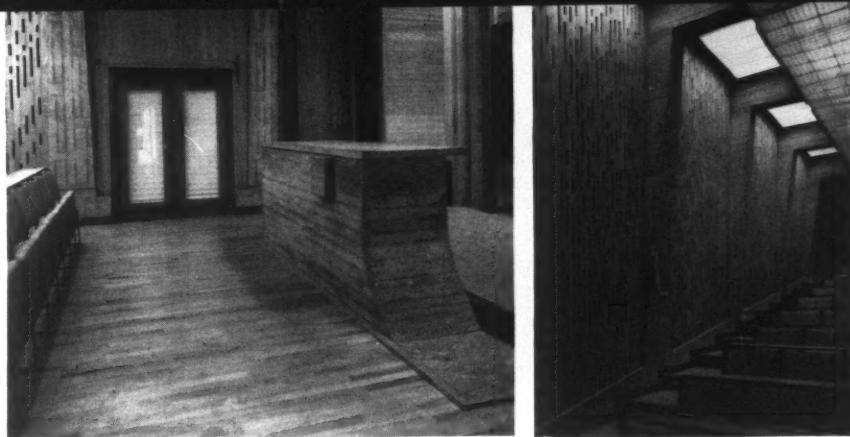
ground floor plan [Scale: 1/48" = 1' 0"]



10, the laboratory unit from the south-east; the bridge will connect with the proposed high-voltage laboratory.

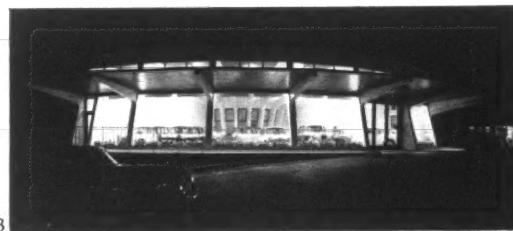
### Engineering Laboratories, Edinburgh

11, reinforced concrete lectern bench in the lecture theatre; the top is of oiled teak.  
 12, wall of the theatre, which is of perforated idigbo wood planking between concrete columns.



11

12



13

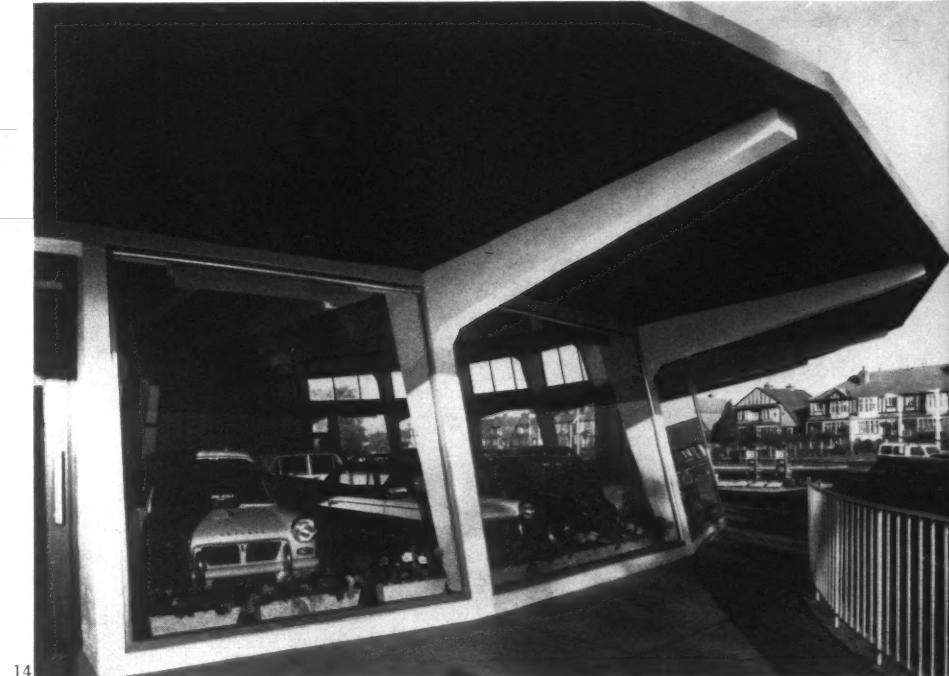
### MOTOR SHOWROOM, EWELL, SURREY

ARCHITECTS: WILLIAM H. AREND AND SON

At a junction of the Ewell By-Pass. The site rises slightly from the road to give access to the front of the building, which is occupied by a single-storey showroom; a car store below, for use largely as an overflow for cars from the showroom, is reached from an access road at the back where the site dips sharply.

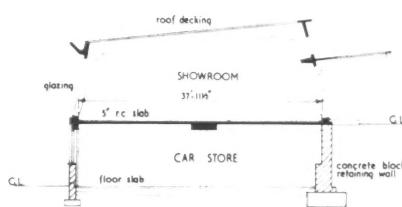
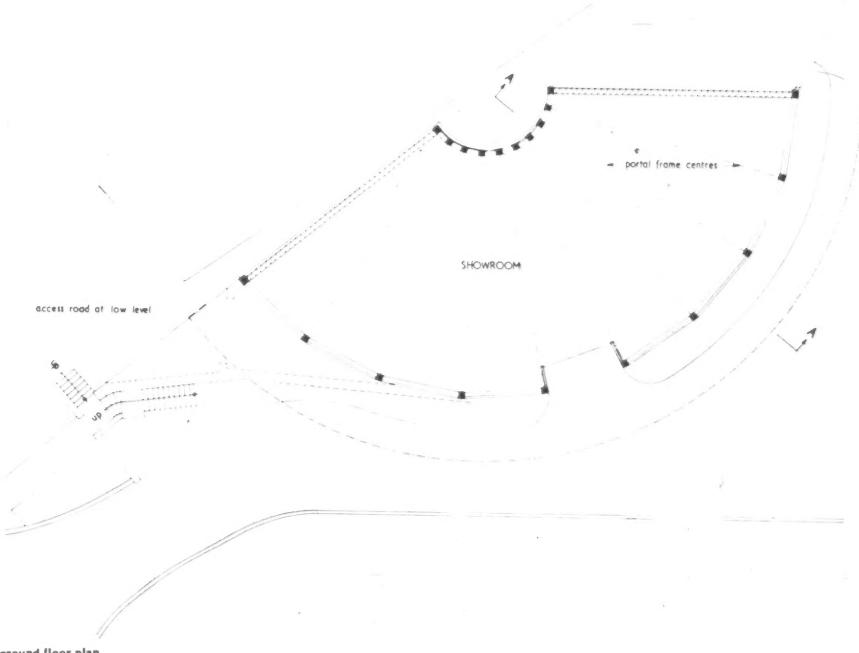
The structure consists of ten radiating portal frames of reinforced concrete, supporting roof decking. Their tapered outer columns provide the framing on the main elevation for eight plate-glass windows below a canopy. The canopy is supported on tapered reinforced concrete brackets cantilevered out from each of the columns. In the two flanking frames brick infilling forms side walls to the showroom. Brick walls in conjunction with an existing 18 in. concrete block retaining wall (over which the curved front of the showroom is built) form the sides to the car store. The portal frames span 39 ft. to the back of the showroom and give a completely clear floor space in which cars can be manoeuvred. The floor, which also acts as a roof for the car store below, is a 5 in. reinforced concrete slab supported on the side walls and centrally by a beam, which is carried, in turn, on reinforced concrete columns.

The side walls of the showroom are rendered with a cement and sand mixture and painted—pale pink internally and white externally. The edges of the canopy and the roof overhang are painted in blue, and the underside of the canopy and the interior roof soffit in a darker blue.



14

13, night view. 14, close-up of showroom.



section A-A

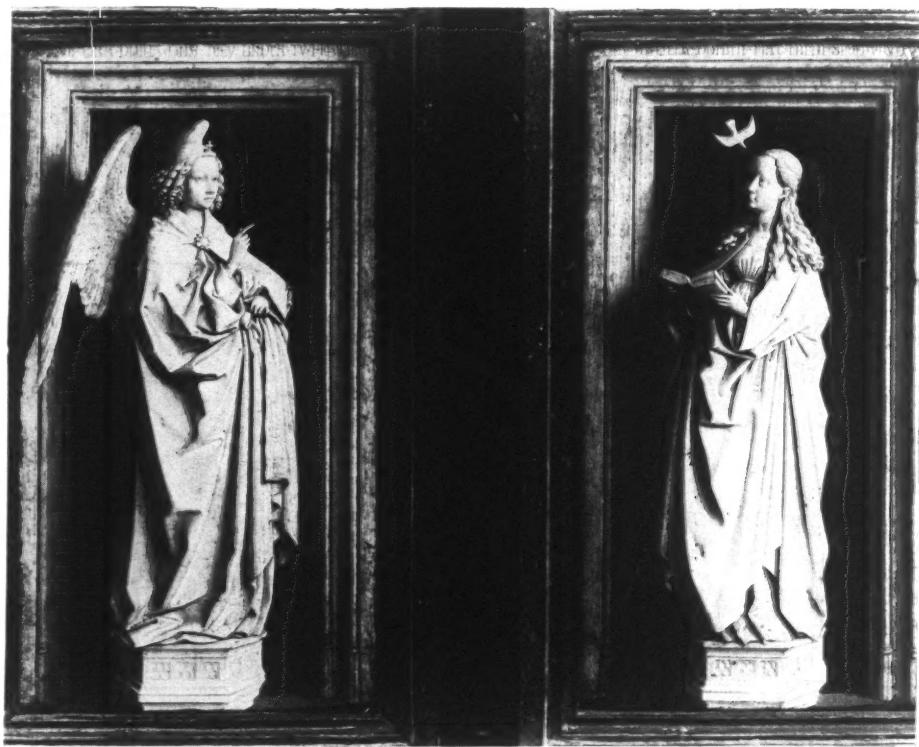
## EXHIBITIONS

## PAINTING

*The selection of 118 paintings from the Thyssen-Bornemisza Collection included so many masterpieces that after the first dumbfounding walk round rooms XXI-XXIV at the National Gallery one instinctively took a tighter grip on the Press hand-out. This was a fascinating and tempting document. On the basis of its information, one could find all sorts of ways of stressing the importance of the pictures without venturing into value judgments or giving away one's own preferences. The paragraph about the various ways in which the pictures were transported to London in order to spread the risk makes awesome enough reading, let alone the frequent references to exhibits which were previously in English collections or would fill gaps in the National Gallery's own collection.*

Actually I'm a bit confused by what appear to be my preferences. The N.G.'s guess was that the most popular picture in the exhibition would probably be Memling's famous double-sided panel, which bears on one side the portrait of a young man with hands joined in prayer, and on the other a still life of a jug of flowers symbolizing the purity of the Virgin. By now their guess has no doubt come true. It's a marvellous picture. But for no reason that I can discover, it's not among those that put me in danger of worshipping graven images.

At the Press View, I made an experiment which was intended to reveal to me my spontaneous preferences—as apart from preferences infected either by my patchy knowledge of art history or by what I think I know about my innate predilections—but I am still puzzled by the result. The experiment, which was made in connection with the choice of a couple of photographs for this article, was very simple. Hoping to take myself by surprise, I merely refrained from making up my mind until the girl at the counter asked me what I wanted. My choice certainly surprised me, and I was quarrelling with it almost before I had left the counter. As you see, they are fine pictures: Van Eyck's pair of small grisaille panels of the Angel of the Annunciation and the Virgin Annunciate, 1, and Rubens's free copy of a 'Venus and Cupid' by Titian, 2. But I had put ticks in the catalogue against the



1 pictures which gave me special pleasure, and these two were not among them, for I had found in them no quirky detail or sign of obsessiveness or streak of abnormality.

There were ticks against Goya's nightmarish head of a blind street guitarist, which Picasso may have had in mind when he drew Franco as a slashed and rotting vegetable, Giulio Romano's tenderly searching likeness of a boy who was probably Alessandro, the illegitimate son of Lorenzo de Medici by a mulatress, Carpaccio's 'Portrait of a Knight in a Landscape' (the earliest life-size, full-length

portrait in European painting) in which not the least curious of many quirky details was the slot in the young Knight's codpiece for holding correspondence. Then there were three works of the German school which I found particularly affecting. One was a St. Jerome by Rueland Frueauf the Elder, who was working in Salzburg in the late fifteenth century; the parent and child relationship between the Saint and his small lion brought to mind those pleasant occasions in my childhood when I knelt by my mother's lap while she passed her hand through my hair to assure herself that I hadn't 'picked up' anything. Hans Baldung's 'Adam and Eve' was another. Many people at the Press View were saying that this was an obvious example of overcleaning, but the glaring whiteness of Eve's body which aroused their complaints seemed to me to be peculiarly expressive of the painter's overwrought sense of the potency of woman. Even more fascinating was Lucas Cranach's 'Nymph Reclining by a Spring.' The figure is an exquisitely disorientated, subtly debased, version of Giorgione's Reclining Venus. Her presence turns all the landscape elements into erotic symbols, and two game birds acquire the furtive air of small devils, as if they were truants from a Bosch 'Temptation.'

After this listing of not very elevated responses to some remarkable paintings, it would be nice to be able to suggest that my unpremeditated choice of Van Eyck



2

and Rubens might mean that 'deep down' I strike a balance between the intellect and the senses, but I fear that these masters were turned up by a trick of the memory. All the same, if I had the chance to choose again I would not now change.

Both pictures are characterized in their different ways by a glowing sobriety. The Virgin and the Venus even have a kind of family likeness. Both are achieved by what might be called positive acts of moderation, and the value which the painters have placed on states of grace has bestowed equality upon their images of sacred and profane love.

One has only to bear in mind the contempt in which *trompe l'oeil* is held in our time, when confronted by Van Eyck's imitation of marble statuary signifying the Virgin's purity and a transcendental interference with the flesh, to realize that our contempt springs from the fact that we can only make vulgar use of it; and one has only to compare the refined and subtle transformation of a Titian into a Rubens with the disruptive and convulsive paraphrases of Velasquez by Picasso or Bacon to realize that we have become barbarians.

I suppose the quality that separates the Van Eyck and the Rubens copy of Titian from the best art of our time—and, for that matter, from much of the Thyssen-Bornemisza Collection—is the one that Maritain calls 'prudence.' El Greco's eye-rolling saints have always seemed to me to be signally lacking in this quality, and there could be no greater opposition to the Virgin's grave acceptance of the love of God in the Van Eyck panel than those extended figures of El Greco's, depicted in the act of being 'sent' by their's. In this sense, Bacon's 'Popes' are much nearer to the spirit of El Greco than to Velasquez.

The notion of transcendence as a condition of intoxication takes all of us beyond the limits of 'ordinary' experience, and it

is at this somewhat low level, competing with liquor, drugs, sex, the jive, and various kinds of hooliganism, that the arts strive more and more directly to 'send' us.

Toulouse-Lautrec brilliantly secularized the notion of transcendence at the same level of illustration employed by El Greco; he was very far from being as great a painter, but he was a great graphic artist, and his talent was perfectly suited to his favourite theme, which was the dance hall, with the dancers in action. It's the theme that lends fervour to his line. He treated intoxication as proper to the human condition, and perceived that it is the state in which human ugliness comes into its own and assumes a tremendous allure. It is by means of the ugly, awkward, graceless movements of the dancers that he catches the transcendence of the dance, and it is with the help of La Goulue's grossness or Marcelle Lender's fearsome, fixed smile that he pitches his sense of gaiety to mystically brutal heights. If he sometimes exaggerated, it was because he was an idealist.

Two very fine drawings of the dance were included in the recent Toulouse-Lautrec exhibition at the Tate Gallery, arranged by the Arts Council with the collaboration of the Musée d'Albi. One was of Chocolat, a negro circus performer who was a regular at the Bar d'Achille, dancing solo there, for pure pleasure; the other was of La Goulue dancing at the Moulin de la Galette, with her partner Valentin le Décossé dancing in the foreground 3. In the depiction of these two male dancers Toulouse-Lautrec seems to be projecting his sense of an ideal state of being. These grotesque yet dedicated men are even more representative of the spirit of the dance than the female dancers. They have no thought for tricks of gaiety. Both are in a trance-like state, and Valentin in particular has the stiff, angular gestures of an automaton; he is beyond himself, in



3 boundless regions to which La Goulue does not even aspire.

It is to these boundless regions that so many contemporary abstractionists, following the example of Pollock and Rothko, seek to transport the beholder. Two accomplished Rumanian painters, Istrati, and his wife, Dumitresco, who have recently been showing at the Hanover Gallery, have this end in view. Their exhibition was introduced by a fellow-countryman, the *avant-garde* playwright Ionescu, who provided useful hints on the best way to get something out of them. Of Istrati, 4, he says that his 'rhythm is that of the whirlwind, it has no form or anti-form other than that of movement itself.' Unfortunately, his abstract textures were too thick to produce a *trompe l'oeil* of wind, and it was with some regret that I had to forgo the pleasure of being vicariously blown about in outer space. Of Dumitresco, Ionescu says that she 'gathers together the scattered pieces of the universe that she is trying to reconstitute . . . if one looks closely at her pictures, one notices that



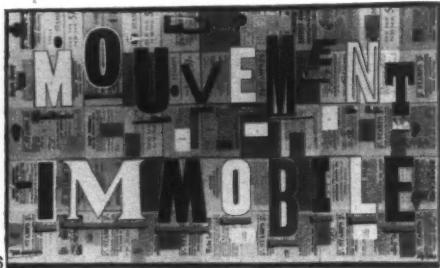
4



5

what is ordered are not things but the abstract places where things could, *à la rigueur*, be ordered. . . The world of the particular and of practical applications is that of second-class minds: politicians, technicians, men of action.' I don't know if the decorator belongs to the world of second-class minds, but that's what Dumitresco, 5, delightfully is. Her colourful, desiccated tessellations would seem to be influenced by Viera da Silva, but lack the latter's mysterious ambiguities of space.

Both these Rumanians are still at the level of good, tasteful picture-making, and although in their somewhat different ways



they try hard to help us to lose our bearings, they are not yet practising the art of induced vertigo.

E. L. T. Mesens, who was one of the founders of the Belgian Surrealist Group, has been making collages since 1924, but it is only in recent years that he has taken to holding one-man shows of them. His recent 'show' at the Grosvenor Gallery followed on the heels of a highly successful one in Milan. He has become so adept at handling heterogeneous materials that he is tending to lose his surrealist intransigence, and a number of abstract compositions which disclose an innate aestheticism fall below his most rigorous standards. But at his best he still mocks the tasteful arrangement with impressive wit and inventiveness, as his 'Mouvement Immobile,' 6, with its delicious background of pages from books of stamps, abundantly indicates.

The vitality of the latest of the 'Young Contemporaries' annual at the RBA Gallery was provided by some of the RCA students. I gather from his remarks made to a Sunday newspaper that the head of the painting school at the College doesn't think much of them, and no doubt the freshness and liveliness of their contributions is due in some measure to the absence of official encouragement. The signs of liberal-mindedness at other schools didn't yield very interesting results. The contributions from Newcastle were too close to basic design exercises, the Slade contributors were once more marching in step under a depressingly mud-spattered banner that is supposed to have been first waved by Bomberg, and the St. Martin's School of Art showed a sudden interest in iron



sculpture that had the look of a facile conversion to Anthony Caro's new way of thinking. Most of the RCA men are using 'pop' material with great verve. Some are taking an intelligent interest in the art of the American painter Jasper Johns, and others appear to be open to the example of another American who is actually working at the College. He is a student on a G.I. grant named Ronald Kitaj, and clearly has something to say. His collage painting 'The Murder of Rosa Luxemburg,' 7, includes a verbal account

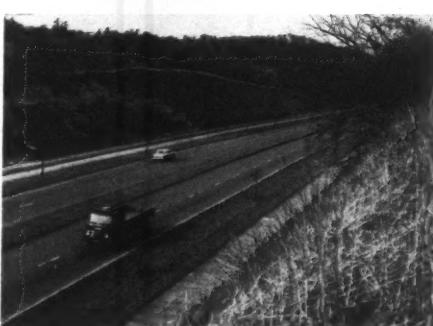
of the murder, a cleverly ragged pictorial impression of it and symbols of the events that led up to it. It has a disjointed, naïve, toiled-over look that works out as an original and eloquent kind of story-telling.

Robert Melville

## ROADS

### DORKING CHERRIES

*The integration of a road like the Dorking by-pass, with broad, sweeping curves, into a landscape of rolling, piebald hills*, such as are seen in 1, demands planting on a scale that will be at one with the hanging woods on the hillsides, and with the serial drama of the motor-road itself. Small trees, thinly spread in 'poor man's avenues' are bad planting policy even in small-scale urban scenes (cf. AR November 1956), but here their incongruity is made immediately apparent as the motorist speeds past them into the cutting that lies just beyond them, 2. The scale of the road-works involved, and their relationship to the form and afforestation of the surrounding



terrain, mock into paltry insignificance the over-spaced, under-scaled trees along the verge. The contrast between what is unsuitable and what is suitable in scale and character is particularly evident in spring-time. The spring makes scenes like 3 (overleaf) all too common—the blossom may be beautiful in itself but it is wasted, irrelevant and out of place in the context in which local authorities plant it. Contrast the coloured picture—which shows how not to plant on big-scale

by-passes—with 4, which exhibits much more of the right quality. A few big trees, closely clumped, mark a bend in the road with an arresting silhouette, a piece of planting that forms a memorable landmark at all times of the year, whereas the cherries can only make their genteel gesture—which may easily go unnoticed—for their few weeks of blossom.

Here was a roadscape that needed the grand manner, the touch of a Humphry



Repton or even a Robert Moses. The men who failed to rise to the occasion signed their work in an entirely appropriate manner, 5—a monument visibly less durable than bronze, by means of which the Surrey County Council unwittingly recorded its scale of values, with punishment writ large and beauty rather small.

C. Forehoe

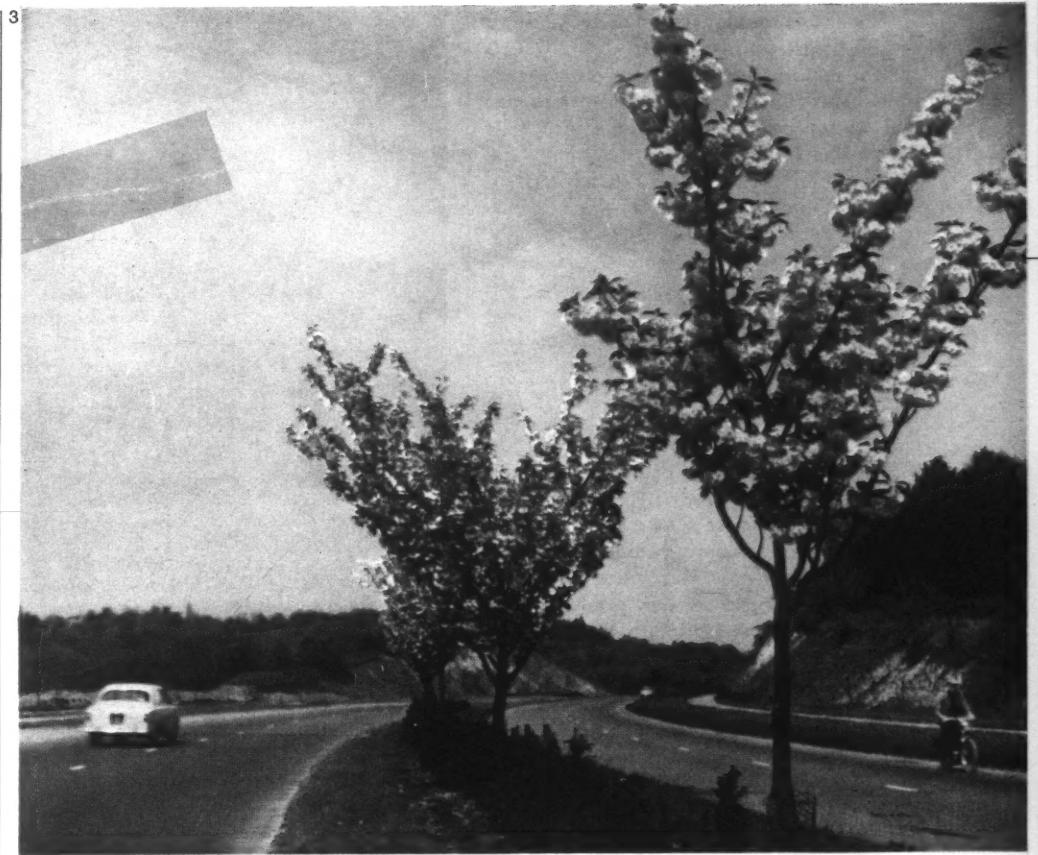
## PLANTS

### CLIMBING PLANTS

*I don't think I have ever seen climbing plants used in a more architectural way than at Standen House, East Grinstead, built by Philip Webb.* Here on a south-facing terrace the great house is bastioned with the Chinese double yellow Banksian rose growing 25 ft. high, a towering passion-flower, the polished grandeur of *Magnolia grandiflora*, while the three arched windows of the conservatory are circled with the white May-flowering species *Clematis montana* (var. *grandiflora* is its best form).

Along the eastern limit of the sloping lawn an oak fence is laced with the Claret vine (*Vitis vinifera purpurea*) and *Vitis cognettiae* which both turn to purples and flaming reds in autumn. (Inside the house the halls and passages are papered with Morris's 'Trellis' for which Webb drew the birds.) In the garden there is an astonishing balance between structure and plant performance, the vines wedged to the strong framework of the trellis fence, the windows carved-out apertures in the exuberant but disciplined clematis.

This is the positive approach, and a strong contrast to the modern attitude to climbing plants, too often considered as a vegetable cover-up for architectural sins.



Because climbing plants take time to establish they must be chosen with special regard for their prospective situation, habit of growth, leaf form, summer and winter performance. For south walls in southern counties the common blue passion-flower, *Passiflora caerulea* is a splendid fine-leaved plant which seems to prosper in poor soil, needs only light support for its tendril twiners (use tarred twine not wire strung up to start it), attains to 15 or 20 ft. in a few years, and is still in full five-fingered leaf in late December. If the frost withers its extremities it should be cut back to the live wood in spring. Starters benefit by a straw corset for the main stem in midwinter. The hardiest passion-flowers I know are raised as cuttings from a gigantic specimen in Syon House Conservatory. These can be obtained in spring from Syon House Gardens, Brentford, Middlesex. One such grown in Hampstead has produced uninterrupted flowers through summer and autumn in its third year and already achieved 10 ft. of rampant growth. The flowers are astonishing examples of botanical form. Hillier's of Winchester also list *Passiflora caerulea 'Constance Elliot'* (white flowers) and a more recent introduction *P. Allardii*.

Neither of the vines laced to their trellis at Standen are subjects for training on walls, both being too coarse leaved (the Japanese *Vitis cognettiae* can produce leaves with a 12-inch span) and their flaming autumn colours are best seen against green or grey plant growth, not against brick or concrete. Both look magnificent freely growing up old trees (plant well away from the trunk and start in good soil). Both can be increased by cuttings.

The requirements of species clematis (as opposed to the large-flowered hybrid kinds) are simple, protection from direct sun at the root and the rest in sun, doing best in chalky soil, but all right in ordinary loam, enriched in November with rotted manure. Prune in February. Rampant species like *C. montana* will climb over anything including roofs, trees, mounds, wooden (not metal) trellises. There are three charming yellow species clematis—*C. orientalis*, *C. Kehderiana*, *C. serratifolia*—which could be more often used.

**Patience Gray**



1, clematis montana at Standen House.  
2, passiflora Allardii.  
3, passiflora caerulea.  
4, claret vine at Standen House.

# SKILL

## HEAVY CLADDING PANELS, 1

*Defining heavy cladding panels as those which are at least two feet square and one inch thick, R. Michael Rostron here discusses their physical properties, the sizes in which they can be made—and handled—how long they last, the different finishes in which they can be got and their cost range. Next month he will consider how they are fixed.*

One of the greatest difficulties in discussing any type of cladding is the question of terminology. Although cladding is as old as building itself, the lack of common agreement on even the most basic terms is a problem which occurs repeatedly. The somewhat arbitrary separation of cladding into 'heavy' and 'light' claddings is a case in point. The obvious distinction by density is not practicable since glass, for instance, which is one of the heaviest building materials, is also the most popular light cladding material. Panels become heavy because they become thick, and thickness is a dimension imposed by lack of tensile strength, manufacturing or production difficulties, weather resistance and availability.

For the purpose of these two articles, which exclude tiles, blocks and sheets, a heavy cladding panel is a flat facing unit with a minimum surface area of two square feet and a minimum thickness of one inch. In terms of weight, it is unlikely that a heavy cladding panel will weigh less than 15 lb. per sq. ft.

Materials for heavy cladding panels divide easily into two groups: the natural stones, marbles and slates, and the man-made cast materials, mainly of concrete. This article will be concerned principally with the physical properties of panels and the next will deal with fixing.

### STONE

Stone, once called the king of building materials, has one of the longest and most honourable histories. Rising cost, the necessity for speedy erection and the shortage of craftsmen have all contributed to the comparatively recent neglect of stone as a building material. But, although it is not easy to justify the

use of monolithic ashlar work today, it would be foolhardy to dismiss stone as an outmoded material. It has for many years been used, rather untruthfully, perhaps, as a facing to brickwork and reinforced concrete and more recently, both in America and England, as an infill panel to curtain wall frames. There is little doubt that, in these new roles, stone will continue to exhibit the beauty of colour and texture and the remarkable weathering properties which places it apart from other materials.

There appears to be no reason why all classes of stone should not be used in panel form, although durability and weathering qualities vary enormously in each geological type. Thin panels of marble, granite and travertine have been used for facing since Roman times and, provided the stone is chosen with care, slate, sandstone and certain limestones may be expected to perform satisfactorily.

### Physical properties

The general characteristics of stone which should be considered are durability, appearance, strength and cost. Some of the important properties of the most common groups of stones are given in Table 1. Broadly speaking, the igneous rocks (granites, syenites and diorites) are the hardest and strongest, followed by the metamorphic rocks (marbles, slate and quartzite) and the sedimentary rocks (sandstones and limestones). Limestones usually are the softest, have the least strength and require the most care in use. Density varies roughly with strength between 175 and 136 lb. per cu. ft.

Although the high compressive strength of most stones is well known, modulus of rupture and tensile strengths are very low, some

limestones having tensile strengths of less than 250 p.s.i. This means that stone must be used in such a manner that shearing and tensile stresses are reduced to the minimum. These stresses result from the relative movement of backing or secondary frame and panel which is caused by settlement or by moisture or thermal movements. Thermal coefficients vary from a low  $0.8 \times 10^{-6}$  per °F. for some marbles to as much as  $9.0 \times 10^{-6}$  per °F. for some sandstones. (Steel is  $6.0 \times 10^{-6}$  per °F.). In addition, the thermal expansion of some dark coloured stones, such as slate, is complicated by their high absorptivities, which lead to high surface temperatures. Movements are, to a large extent, inevitable, but careful and flexible attachment, jointing and support will ensure that they do not produce harmful stresses in the panel.

### Size

Table 2 shows the recommended minimum thicknesses and maximum sizes of panels in various stones. These dimensions are necessarily only approximate and will vary from quarry to quarry. The nature of the fixing may also call for panels thicker than the minimum and the method of site handling may restrict the maximum size used. If panels are to be manhandled, their weight should not exceed 150 lb., or a surface area of about  $6\frac{1}{2}$  sq. ft. for a panel 2 in. thick.

### Durability

The life expectancy of stones is usually assumed to be quite long, although some soft, weak sandstones deteriorate in as little as 10 years. On the other hand, some marbles and granites last for centuries without significant wear. In general, the

life of a stone depends on its hardness, density and its capacity to resist frost damage. Hard, dense, non-absorptive stones will last indefinitely; soft, porous stones have limited lives.

The inherent durability of stones is most affected by the action which takes place in the stone during alternate cycles of freezing and thawing. Unfortunately, artificial tests may give misleading results and BRS Digest No. 21 suggests that 'until it is possible to determine exactly how the freezing and thawing conditions must be controlled to secure results that accord consistently with practical experience, laboratory freezing tests must be considered unreliable.' In judging the frost resistance, practical experience will afford the most reliable guide. Where this is lacking, water absorption measurements will give a useful indication, the absorptivity usually being given in terms of the percentage of water absorption by weight. Figures range from less than 0.1 per cent for some dense marbles and granites to more than 10 per cent for a few porous limestones. It is ordinarily assumed that limestone and some sandstones require waterproofing when used in thin slabs.

Local conditions which affect the durability of stone are the conditions of fixing in relation to the natural bed of the stone and the prevalence of harmful chemicals deposited either from adjoining materials or atmospherically. Various agents present in urban atmospheres such as sulphur dioxide, carbonic acid gas, chlorine and ammonia, as well as salts from coastal atmospheres, will tend to break down and deteriorate stone. Chemical tests may give some indication of the resistance of a

# SKILL

table 1: average physical properties of stone.

property	granite	marble	limestone	sandstone	slate
Density, lb. per cu. ft. ...	163	170	136	137	175
Specific gravity ... ...	2.7	2.66	2.66	2.4	2.8
Hardness (abrasive) ...	20	15	12	13	18
Absorption, per cent by weight ... ...	0.1-0.8	0.09-0.25	2.4-13.0	2.3-8.5	1.0 min.
Crushing load, 1,000 p.s.i.	10-25	10-23	1-15	2.5-13.5	8.3-30.6
Ultimate shear strength, 1,000 p.s.i. ... ...	2.3	0.7-1.8	0.6-1.2	0.9-2.3	
Ultimate tensile strength, 1,000 p.s.i. ... ...	up to 1.5	up to 0.7	up to 0.5	up to 1.0	up to 12.8
Modulus of rupture, 1,000 p.s.i. ... ...	1.2-2.2	0.9-2.3	0.25-2.7	0.5-2.2	5.0
Coefficient of thermal expansion per °F. $\times 10^{-6}$	4.5-6	0.8-6	1.3-5	4-9	3.5-5.5

table 2: size and thickness of stone panels.

stone	minimum thickness	maximum area	longest dimension
Granite ... ...	2 in.	6 sq. ft.	3 ft.
Marble ... ...	1½ in.	16 sq. ft.	5 ft.
Limestone ...	6 in. 4 in. 2 in.	25-30 sq. ft. 12-15 sq. ft. 12 sq. ft.	6 ft. 6 ft. 6 ft.
Sandstone ...	1½ in.	10 sq. ft.	5 ft.
Slate ... ...	1 in. (sawn) 1 in. (riven) ½ in. (riven)	10 sq. ft. 4 sq. ft. 1½ sq. ft.	5 ft. 3 ft. 1 ft. 6 in.
Quartzite ...	¾ in.	2 sq. ft.	1 ft. 8 in.

table 3: relative costs of typical stone panels.

stone	finish	thickness	cost index
Granite ... ...	all polished ...	2 in.	350
	egg shell ...	2 in.	300
	fine axed ...	2 in.	275
Limestone (Portland)	frame sawn ...	6 in.	125
	frame sawn ...	4 in.	90
Sandstone (Bolton Wood)	rubbed ...	2 in.	65
Slate ... ...	fine rubbed, sanded or frame sawn	1 in.	85-105
	natural riven ...	1 in.	65-85
	natural riven ...	½ in.	40-45

table 4: a selection of natural coloured aggregates suitable for use in cast panels.

white	grey and blue grey	pink and red	green and blue
Spar Calcined flint	Basalt Whinstone	Corenie granite Red Peterhead granite Shap Pink granite	Penzance granite Shap Blue granite Welsh and Westmorland slate
Silica quartz	De Lank granite	Croft granite	Swedish green marble
Portland stone	Kemnay granite	Stoneycombe granite	Connemara Irish green marble
Sicilian marble	Lower Persley granite	Radford limestone	Montgomeryshire basalt
Norwegian quartzite Creetown granite	Rubislaw granite Craigenlow granite	Norwegian marble	Criggion green granite

particular stone to attack, but, in view of the highly polluted urban atmospheres of today, all stonework in urban areas should be cleaned at least every three years.

A final consideration is the ability of the stone to maintain its colour and appearance with time. Hard, dense stones have an advantage in this respect, although the change of colour and texture associated with the age of limestone is usually considered an advantage.

#### Finishes

Stone finishes are roughly divisible into three categories:

(a) *Natural*. The natural surface of the rock as cleaved from the quarry. The deeply modelled natural finishes, such as rock-faced granite, require a panel too thick to be generally useful. With the exception of natural riven slate, stone cleft on its natural bed should be avoided. Most natural finishes impose restrictions on size due to quarrying difficulties.

polluted atmospheres and make panels difficult to clean. Rubbed finish is a little more expensive, but rubbing removes the saw marks and washes quite easily.

(c) *Hand Tooled*. Bush hammered, pick pointed, axed and other hand finishes are all expensive and, despite their highly characteristic texture, will only occasionally be required.

#### Cost

Table 3 shows the relative costs of typical stone panels expressed as cost indices. Actual costs are difficult to determine, due to the very wide range of stones in each group, but the cost index 100 represents very approximately 20s., including delivery but excluding erection. As might be expected, cost increases with hardness and the amount and nature of surface dressing.

#### CAST PANELS

Cast panels are undoubtedly the most flexible and versatile heavy facing units. Within very wide limits the architect is able to select colour, texture, pattern, size and weathering qualities to satisfy almost any requirements. At the same time, the fabrication and fixing of cast panels demand thorough and careful attention if failures are to be avoided.

Whilst the appearance of cast panels may vary from the sophisticated regularity of mosaic facing through the various exposed and brushed aggregate finishes to profiled concrete, reconstructed stone and smooth polished surfaces, the basic unit is of precast concrete. The qualities of the finished panel will be determined by the choice of aggregate and cement, the method of casting, the treatment of the surface and the type and length of curing.

#### Colour

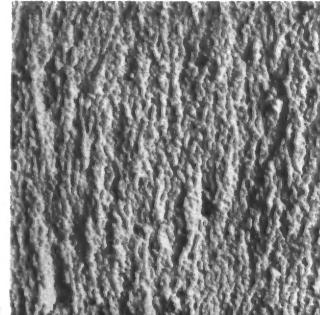
Although pigmented cements are available in addition to the more familiar grey and white cements, they do not weather uniformly when used alone. If coloured panels are required a naturally coloured and exposed aggregate combined where necessary with pigmented cements will be more likely to weather uniformly without fading. The final colour of the slab will, however, ultimately depend as much on its surface treatment and texture as upon the colour and relative proportions of aggregate and cement. The greater the exposure of the aggregate, the less will be the importance of cement colour, although its tonal effect on the slab colour will never be negligible.

Table 4 lists the colours of various aggregates composed of crushed natural rocks. It is by no means exhaustive and both durability and colour will vary with geological type, locality and quarry. In addition to crushed rocks, natural gravels may be obtained in colours varying from black and purple to brown, buff and white. By calcining flints a multi-coloured aggregate can be produced, the colours depending on the iron content of the flints.

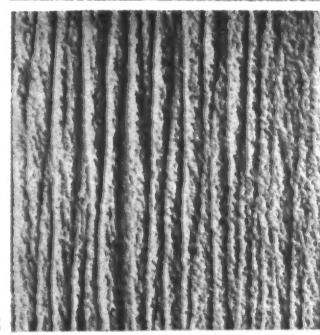
Whichever type of aggregate and cement is chosen, care must be taken to ensure that sufficient quantity is available to complete a contract. Bulk storage by the manufacturer is recommended to avoid slight colour variations caused by intermittent supplies.

#### Texture, pattern and surface treatment

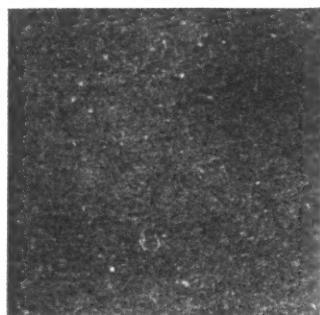
The type of panel surface required will be dictated generally by purely visual considerations. The area of surface to be covered and the scale,



1



2

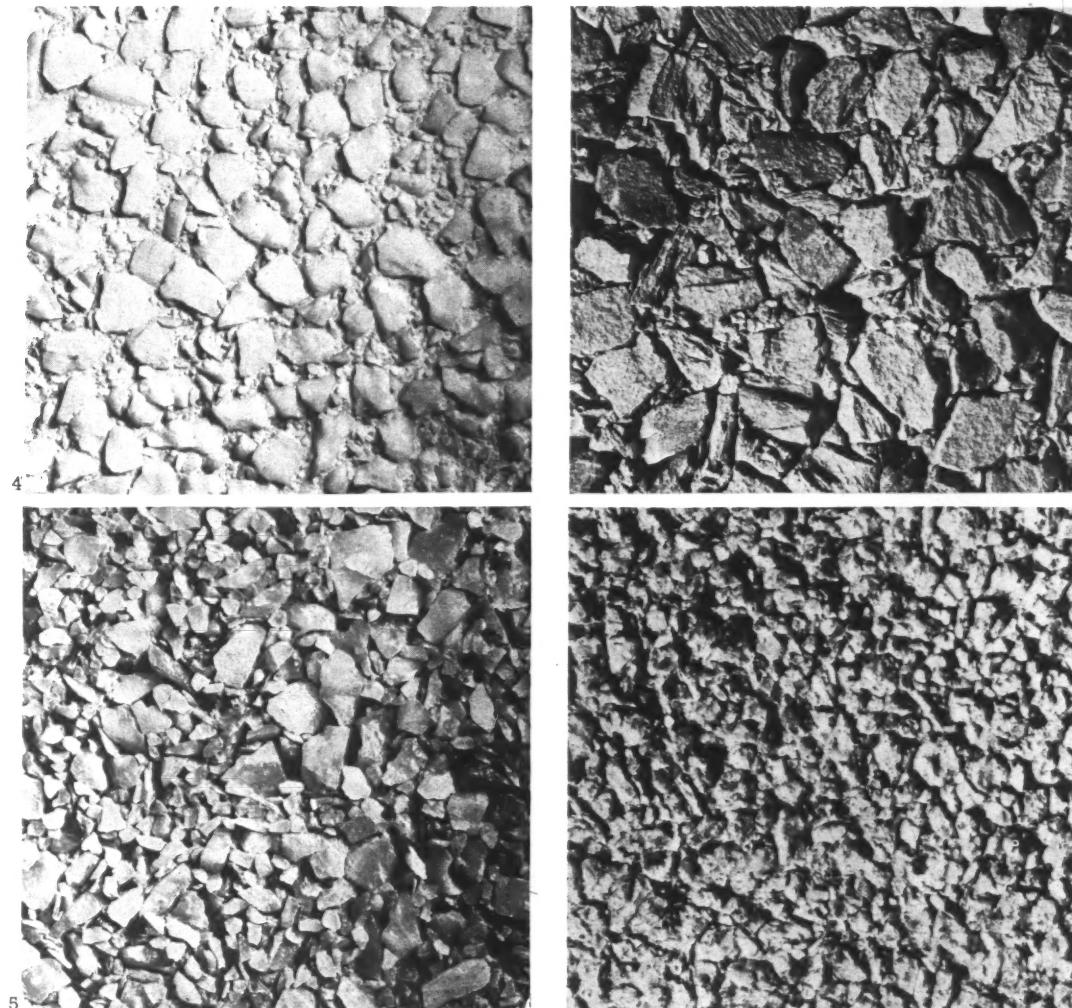


3

Three types of stone finish: 1, riven; 2, sawn; 3, sanded.

(b) *Machine*. A very wide range of finishes is produced by mechanical planers, saws and polishers and the one most suitable for panels. Surface texture may vary from the medium rough shot-sawn to smooth polished. The harder granites, slates and marbles will take a high surface polish, but polished marble dulls fairly quickly and is not recommended for exterior use. Plain sawn finish is the cheapest machine finish for stone, but the saw marks, which are  $\frac{1}{32}$  in. to  $\frac{1}{16}$  in. deep, retain dirt in

[continued on page 35]



Varieties of finish obtained by the use of exposed aggregates selected for their characteristic textures. 4, Norwegian quartz, white and translucent, in white cement. 5, the same in grey cement. 6, green Westmorland slate. 7, Cornish De Lank. All are reproduced at about half natural size.

continued from page 356]

aspect and distance of particular elevations are all important factors, but long term visual requirements, such as the ability of the panel to weather uniformly, are of equal importance.

Profiling and large scale patterning is achieved by mould shape; small scale patterning and coarser texturing by lining the mould with patterned sheets of timber, steel, plastic or rubber, or by casting the slab face down on previously arranged aggregate. The more common small scale texturing and polishing is normally produced by surface treatment of the slab whilst still green. An important exception is reconstructed stone, where the smooth surface is obtained by careful choice and grading of aggregate, clean moulds, a very dry mix and hand packing.

When pattern or texture are achieved by mould shape, a lubricant should be used to avoid the plucking of green concrete when stripping. Rubber linings require vegetable oil lubrication, as mineral oils tend to deteriorate rubber. Lanolin or castor oil are suitable, but, because of their viscosity, the spreading operation should not be hurried. If the patterning is shallow, an alternative to lubrication is to leave the panel for 48 hours before stripping, but this may not be economical if a large number of panels is required.

The texture of exposed aggregate finishes will be governed by both the size of aggregate and the surface treatment of the green concrete. J. Gilchrist Wilson, of the Cement

and Concrete Association, has recommended the following maximum distances at which various sized aggregate will be seen to the best advantage:

Size of aggregate in inches	Distance in feet
2-1/2	125
1-1/2	90
1-3/4	75
3-1/2	50
1-1/2	30
3-1/4	20
1-3/16	15

These distances are based on the use of aggregates of one colour and will need to be modified in certain circumstances. For instance, they will require modification when the aggregate contains both light and dark particles and also for contrast caused by shadows from the particles of aggregate, which will vary with conditions of lighting.

Coarse aggregates may be incorporated in the panel in one of two ways. The aggregate may be embedded in a layer of sand placed in the bottom of the mould, covered with a layer of plain or coloured mortar and the mould filled with the backing concrete. Alternatively, the manufacturer may prefer to cast the panel face up, tamp the aggregate into the concrete and expose it by spraying with water.

Medium smooth finishes are obtained by spraying the surface with water, or by abrasion of the surface, either with scrub or wire brushes or with an abrasive stone such as carborundum, all abrasive

operations being carried out when the concrete has set but whilst it is still green. Care should be exercised when using wire brushes, as these may discolour pale surfaces. Carborundum blocks give good results provided the scrubbing is carried out not later than 48 hours after casting, but the depth of exposure is quite small. For coarser textures, a retarding solution painted on the mould before casting will delay the setting of the surface and enable the scrubbing to penetrate deeper. During all these processes the surface of the panel should be kept quite wet and thoroughly flushed down on completion.

Fine textures call for careful choice of grading of aggregates and the use of acid etching, felt floating or hand tooling, although the attractions of toolled finishes are somewhat dispelled by their high cost. Casting the panel against plastic sheeting will give a smooth finish, but it should be remembered that smooth and polished finishes, such as those obtained by grinding, require the utmost care in curing if crazing is to be avoided and their weathering qualities may present problems in detailing.

The appearance of the panel will be quite different if it is faced with a decorative and weatherproof veneer of vitreous or ceramic mosaic or tiles, although the basic manufacturing procedure will be similar to that for self-finished panels. It is usual in such cases to lay the tesserae or tiles either individually or gummed

face down to paper in the bottom of the mould before casting the panel. Apart from the extra weight of such a panel, the nature of the finish and the vulnerable joint between veneer and backing requires the utmost care in handling and fixing. On the other hand the choice of colour is much wider than that of aggregate exposure.

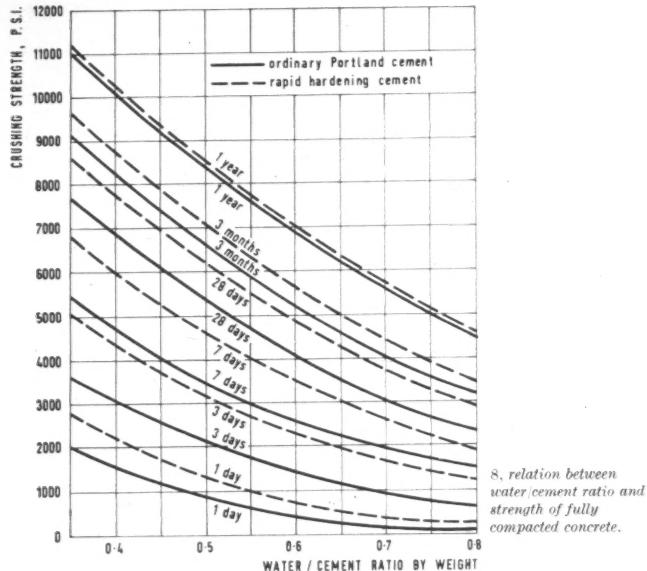
#### Components and properties

The basic components of all precast panels are one of the various Portland cements, aggregate and water. To increase factory production, the use of rapid hardening Portland cement is recommended, allowing moulds to be stripped after 24 hours, when the concrete has attained a strength about 75 per cent greater than that made with ordinary Portland cement.

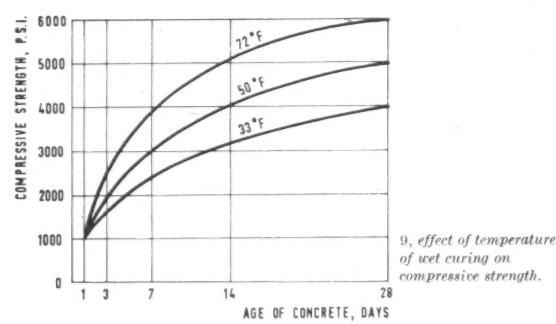
As concrete consists of about 80 per cent aggregate, the choice of aggregate is important. Aggregates should be clean, hard, durable, strong and free from organic and chemical matter, well graded by size and as light as possible without impairing other qualities. Concrete made with expanded minerals or other lightweight aggregates will be easier to handle and have better thermal qualities than that made with the traditional sand and gravel aggregates, but the necessity to provide a less porous mix for the outer face means that full advantage of lightweight concrete can only be taken with comparatively thick panels.

It is generally specified that water used in concrete shall be fit for

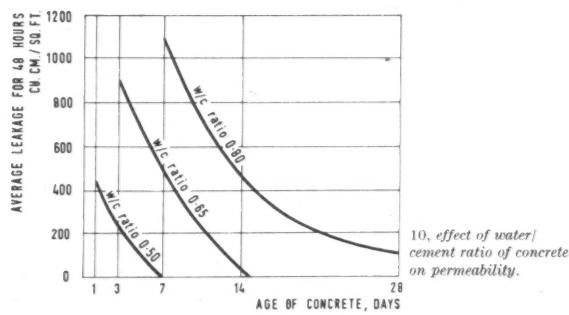
## SKILL



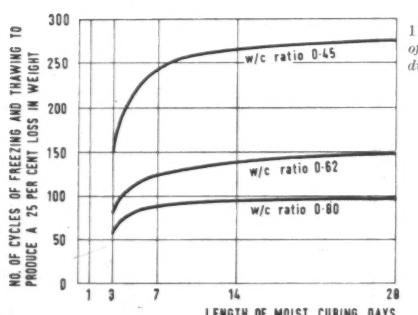
8. relation between water/cement ratio and strength of fully compacted concrete.



9. effect of temperature of wet curing on compressive strength.



10. effect of water/cement ratio of concrete on permeability.



11. effect of the length of moist curing on the durability of concrete.

drinking, as river and canal water frequently contains vegetable and other organic impurities harmful to concrete. Sea water reduces the ultimate strength by about 15 per cent, but the salt may cause unsightly efflorescence.

The compressive strength of concrete is governed by the water/cement ratio. The mix is not critical provided a minimum of 600 lb. of cement per cu. yd. of concrete is used and the resulting concrete has a minimum compressive strength of 5,000 p.s.i. at 28 days. To attain this strength, the water/cement ratio should not exceed 0.6 (rapid hardening Portland cement) or 0.5 (ordinary Portland cement), 8, but these figures may be reduced by up to 20 per cent if the concrete is vibrated. In order to ensure an adequate bond between facing and backing mixes, the second mix should be placed not later than two hours after the first.

Concrete hardens as a result of chemical action between cement and water and if drying out is allowed to take place rapidly, surface crazing may develop and the strength will be seriously reduced. To overcome this and to prevent abnormal moisture movement the panels must be covered with wet hessian or sand and moist cured at 70°F. for 15 to 48 hours after manufacture. They should then be kept moist on both sides at a minimum temperature of 50°F. for at least eight days and then covered and stored for a further three weeks before use. Panels will generally cure more rapidly and reach higher strengths as the temperature of curing is increased, 9.

Panel reinforcement is required more to prevent the panel falling apart due to impact fracture than to withstand distributed loads. For all but very large panels a mesh or fabric will be sufficient, large panels requiring additional rods in the ribs. However small or secondary in importance reinforcement may be, it should always be placed within the

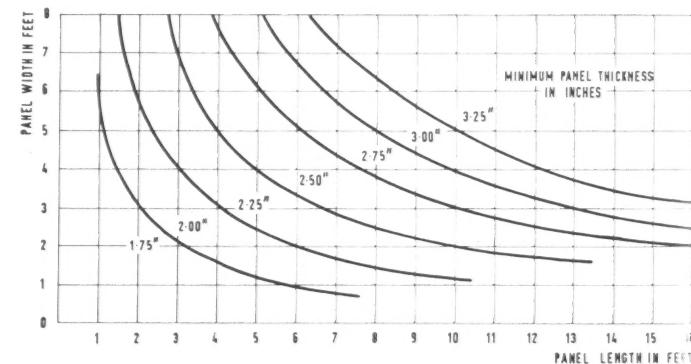
backing concrete and have minimum cover on the weather surface of 1½ in. Most corrosion failures and spalling of panels start with rusting of reinforcement or even binding wire, and the practice of clipping tying wires off flush with the finished concrete surface is to be strongly deprecated. Galvanized reinforcement may be placed rather closer to the surface (say 1 in.) but even so, panels thinner than 2 in. are not recommended and allowance should always be made for porous aggregates and for reduction of the effective cover by surface treatment.

### Durability

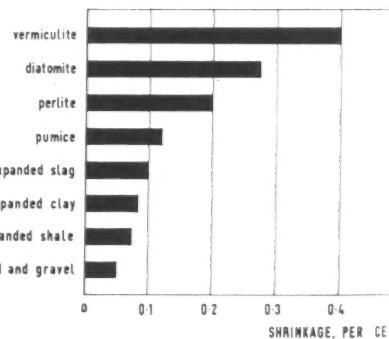
The durability of concrete is, like that of stone, dependent mainly on its capacity to resist the effect of alternate freezing and thawing of water beneath the surface. It follows that this action will be reduced if water can be excluded from the panel by reducing its permeability. Again, the water/cement ratio is important, as leakage increases rapidly with water/cement ratio, 10. Porosity is also affected by the length of curing; 11 shows that panels should be prevented from drying out for at least ten days in order to obtain the maximum resistance to disintegration by frost. Apart from using a dry mix and curing well, good durability requires sound aggregates of low porosity and correct grading, plastic and workable mixes, thorough mixing and correct placing.

The weathering of panels is determined by their ability to conceal or dispose of rain falling through soot-laden atmospheres. Very smooth textures, although less prone to absorption of grime, demand care in detailing if streaking is to be avoided. Rough textures will break up the flow of water and avoid streaking, although they will tend to retain more dirt and be difficult to clean manually when this is necessary. Detailing is again important to avoid uneven weathering due to the pro-

[continued on page 360]



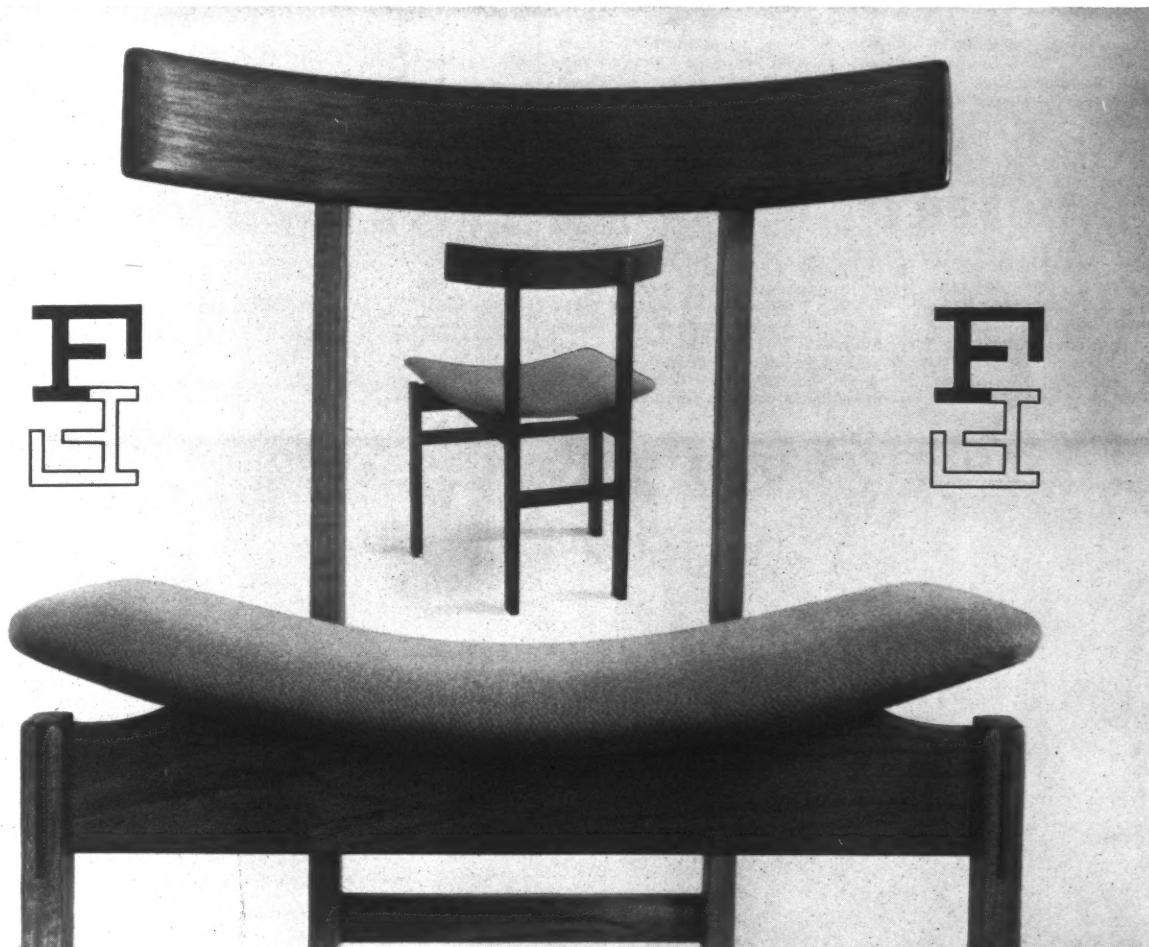
12. minimum mean thickness of cast panels.



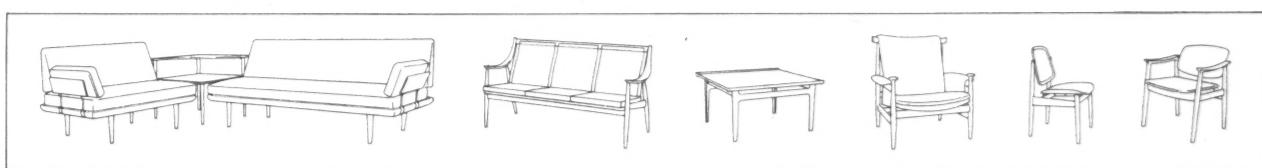
13. average shrinkage in concrete after 100 days.

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Above, dining chair by Klingenberg and Littell (model 193) in solid teak. Height of seat at front 16½". Retail price: £9.15.0. Also available with round, upholstered back (model 195).



Left to right (model numbers in brackets): settee (418 abc: £60.10.0), corner table (519: £21.0.0), settee (417 abc: £81.0.0) and cane-back settee (147/3: £58.0.0) by Hvidt and Mølgaard; table (534: £21.15.0) and armchair (152: £53.10.0) by Finn Juhl; cane-back chair (205: £16.15.0) by Arne Vodder; chair (189: £28.0.0) by Kindt-Larsen.

## SKILL

continued from page 358]

tection of part of the panel by wide projections.

### Size and cost

Apart from visual considerations, the chief limitation on the size of cast panels is transport and erection procedure. If panels are to be man-handled, their weight should not be greater than about 150 lb., which, allowing for edge thickening of a 2 in. panel, gives an area of about 43-5 sq. ft. If panels are to be mechanically handled, the largest possible size should be used, with an economic maximum of about 120 sq. ft. In either case, panels should be dished to reduce weight and to allow suitable edge thickness for jointing. 12 has been prepared by Messrs. John Ellis and Sons Limited, of Leicester, and shows suggested minimum mean thicknesses of cast panels. For reconstructed stone panels the length and width ordinates should be halved and in both cases the mean thickness is the average thickness of panel and ribs.

Concrete shrinks appreciably as it dries, the shrinkage increasing with

the lightness of the aggregate, 13, due to greater absorption of water. Provided curing is properly controlled, the greater part of the shrinkage will have taken place after four weeks. Although shrinkage is not entirely predictable, manufacturers should be able to ensure a fair degree of dimensional accuracy. Minus tolerances of  $\frac{1}{8}$  in. in 20 ft. are possible, although such accuracy is seldom necessary and three to four times this amount is more usual, depending on joint design. However large acceptable minus tolerances may be, plus tolerances should on no account be allowed, as oversize panels can only lead to delays on site. If panels are properly manufactured in clean well constructed moulds, there should be no difficulty in ensuring a plus zero tolerance.

The cost of cast panels varies widely with facing aggregate and size, large panels costing proportionally more than small panels because of the extra care required in handling and greater transport costs. A basic price for 2 in. thick plain panels with exposed Mountsorrel granite aggregate facing is about 5s. 6d. per sq. ft.

lubricated. There is only one moving part, the rotor and impeller being mounted on a common stainless steel shaft. Seals have been eliminated, a stationary stainless steel sleeve protecting the stator from water. The unit operates quietly and is contained in a neat cast metal casing measuring 9 $\frac{1}{2}$  in. by 7 $\frac{1}{2}$  in. overall. The manu-

facturers point out that the unit may be used to convert an existing natural circulation domestic central heating system. Retail price is £22 10s. and there is a two-year guarantee covering replacement of the entire unit.

*Pulsometer Pumps Limited, 20/26 Lamb's Conduit Street, London, W.C.1.*

[continued on page 362]



1, the *Pulsometer Perfecta NCP 2-50 circulator*.

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Pulsometer Pumps Limited have been designing and making heating pumps for over half a century. Recently the firm announced that it was entering the domestic field by commencing manufacture in this country of the Perfecta Circulator,

originally developed by Dr. Rutschi, of Pumpenbau, Brugg, Switzerland.

The Pulsometer Perfecta NCP 2-50, 1, is a glandless circulator intended for use with small bore central heating. It is operated by a single phase 50 cycles motor (200-220 or 220-250 volts) and is water



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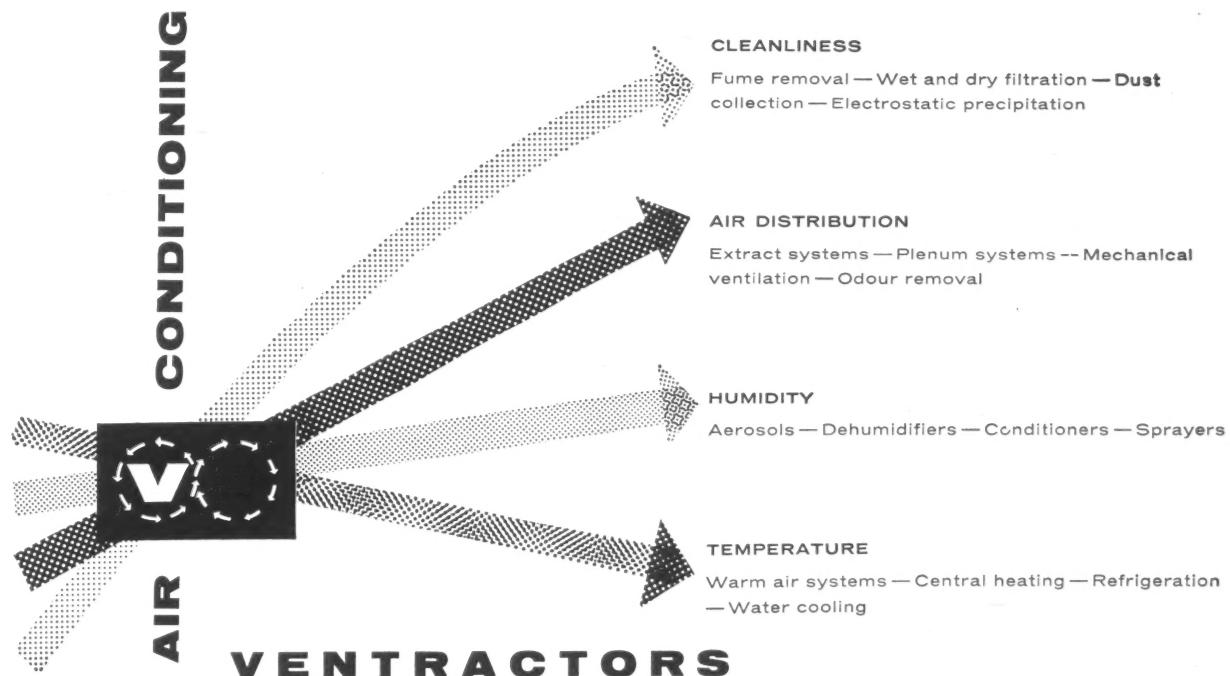
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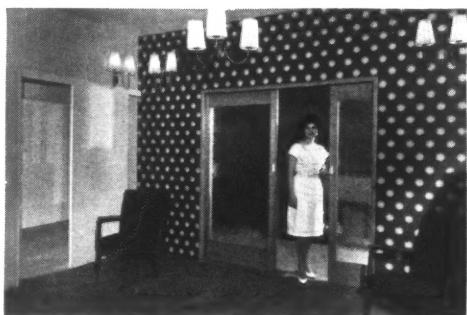
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continued from page 360]

#### Paint specification

R. Gay and Company have issued a new specification for the guidance of architects and interior decorators when using their paints. The paint industry has undergone quite a revolution in the past ten years or so. Gone are the times when the painter had to mix his primers and paints on the job. He now gets a service from the paint manufacturer second to none in the building industry. By and large architects have reacted to these changes by giving up the writing of lengthy general specifications of their own and relying on the manufacturer's instructions. To

this end Gay's specification should prove a useful addition to the architect's bookshelves. Section 1 of the specification describes the appropriate treatment for various surfaces both new and previously treated (such as with distemper, emulsion paint, lining paper, etc.). Section 2 describes the decorative materials referred to in the specifications and section 3 other specialized materials not referred to. Gay's point out that the specifications are issued to supplement and not to supplant their technical service. Copies of the book are available from the manufacturers. *R. Gay and Company, 93-97 New Cavendish Street, London, W.1.*

#### Auditorium seating

Race Furniture have recently produced a new design for auditorium seating, 2, 3. The seat has a single central pedestal support welded to a flange which is screwed to the floor. The seat and backrest are of latex foam with plastic foam for the arm rest. The metal frame is made in two alternative finishes, either stove enamelled to a selected colour or coated with a fused nylon film having a gunmetal grey finish.

The seat is designed to be delivered completely assembled except for arm rests with which individual chairs are joined together. It is possible to fix a bank of seats



2, 3, auditorium seating by Race Furniture Ltd.

around a very small radius. The seat was designed by Peter Dickinson (Director of Design: Ernest Race). *Race Furniture Limited, Sentinel House, Union Road, London, S.W.4.*

#### Wall light

Included in Cone's new range of fittings is this wall bracket light, 4. The metal wall plate is in eggshell enamel finished white or black. The arm of the fitting is similarly finished.

[continued on page 364]

## PERSONAL

## PLASTIC LAMINATES

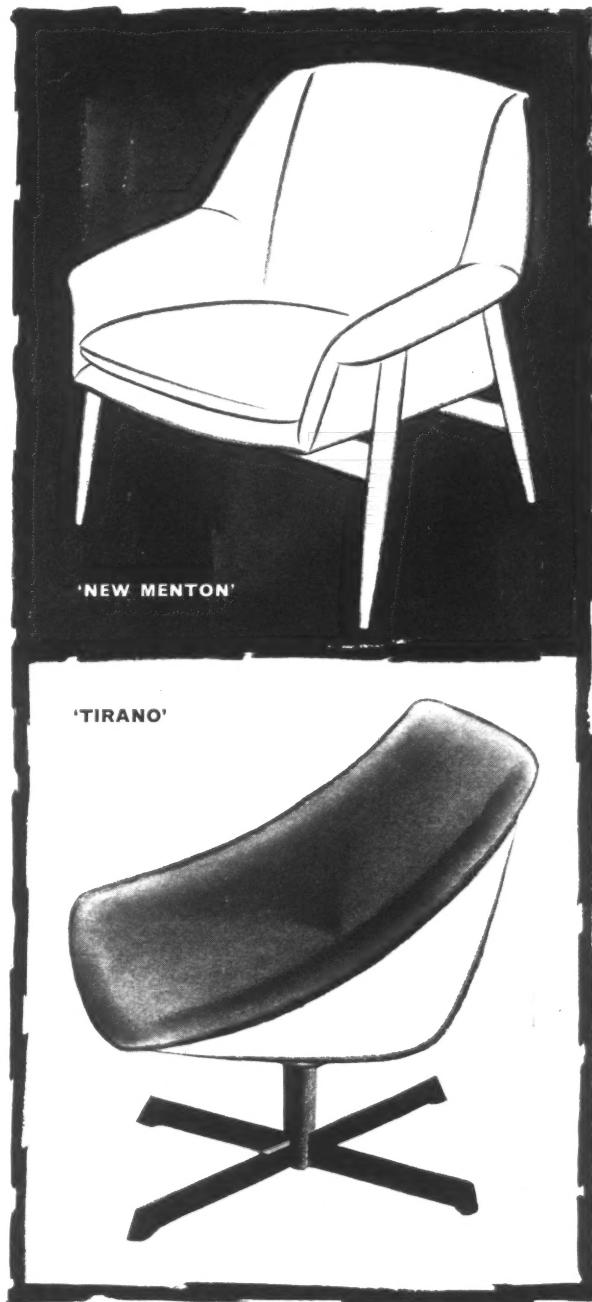
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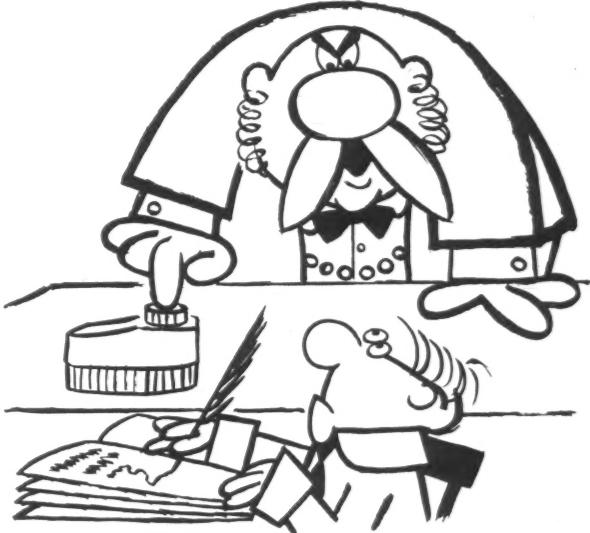
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CVS-493

'Good grief!' said the Senior Partner.  
'Nearly 4 quid for a pencil sharpener!'



Um...er...yes Sir. But this is a somewhat unusual p-pencil sharpener. If I might be p-permitted to... er... demonstrate, Sir.

One simply has to take a p-pencil in one's right hand... or one's left hand would do equally well... and p-place it into this little... er... hole.

P-press down gently... um... so. And... see... the sharpener starts cutting automatically.

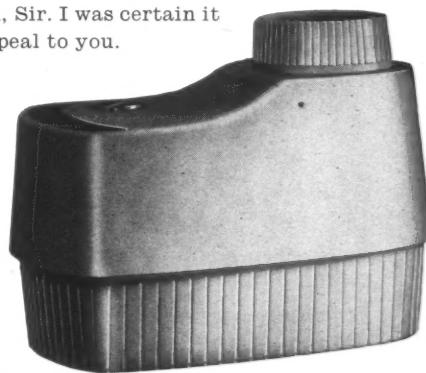
Allow it to run for a few seconds. Lift out. And p-presto! A p-perfect p-point!

Um... p-pardon, Sir? Oh yes, Sir. *Most* attractive. And you will observe that although it is electric, it has no unsightly flex.

If I might suggest, Sir. Just here, next to your blotting p-pad, would be the best p-place.

Er... just as you wish, Sir.  
Thank you, Sir. I was certain it would a-p-peal to you.

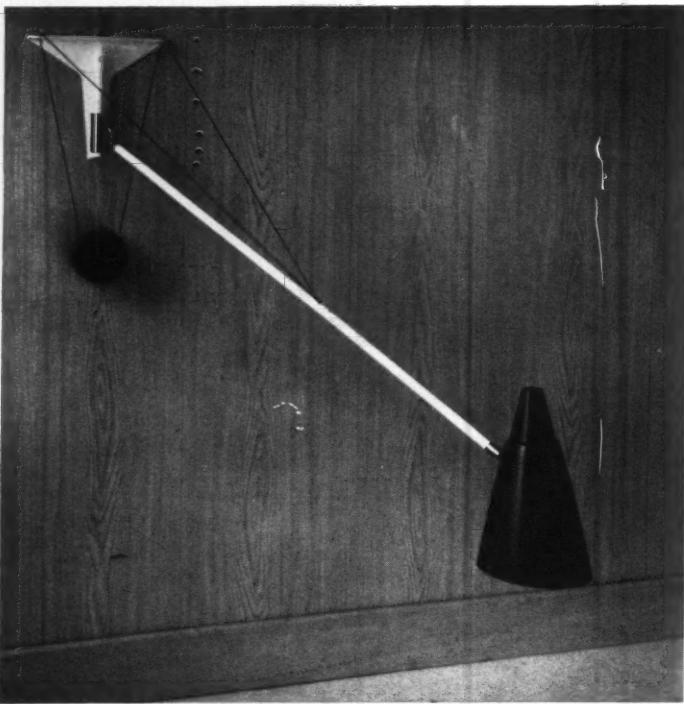
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4, the Cone adjustable wall bracket light

Wooden plates, in polished sapele mahogany or other hardwoods, are available to special order. The balance weight rim, ball joint and universal joint are in polished and lacquered

brass and the shade, which is 9 in. high and has a diameter of 5½ in., is in spun aluminium, stove enamelled white inside and available in a variety of colours outside—red,

blue, yellow, lilac, black or white. The swing arm can be adjusted to any position in a hemisphere. It moves at a touch and stays in position, relying on the balance weight.

*Cone Fittings Limited, 9 Rosemount Road, London, N.W.3.*

#### CONTRACTORS etc

**Gown Shop in Nottingham.** Architects: Diamond, Redfern & Partners. General contractor: R. Robinson. Sub-contractors: Light fittings: George Forrest & Sons. Curtaining: Jessop & Son. Fitted carpet: Hopewells Ltd. Paints: Joseph Mason Ltd. Ironmongery: Dryad Metal Works Ltd.

**Bookshop in the City.** Architects: John & Sylvia Reid. General contractor: Merry and King Ltd. Electrical installation: Johnson Smith & Co.

**Housing, Abbots Langley.** Architect: Ernö Goldfinger. General contractor: Drury & Co. Sub-contractors: Precast concrete: Concrete Ltd. Asphalt paving: Val de Travers Asphalt Ltd. Heating and hot water: Grocock & Day Ltd. Iron and metalworker: Best & Lloyd Ltd. Electrical: J. W. Russell Ltd. Ironmongery: Parker, Winder & Achurch Ltd. Windows: Sharp Bros. & Knight Ltd. Sanitary fittings: John Bolding & Sons. Precast concrete units: Atlas Stone Ltd. Partitions: Roof & Lining Construction Co. Flooring: Armstrong

**Cork Co. Doors:** Austins of East Ham Ltd.

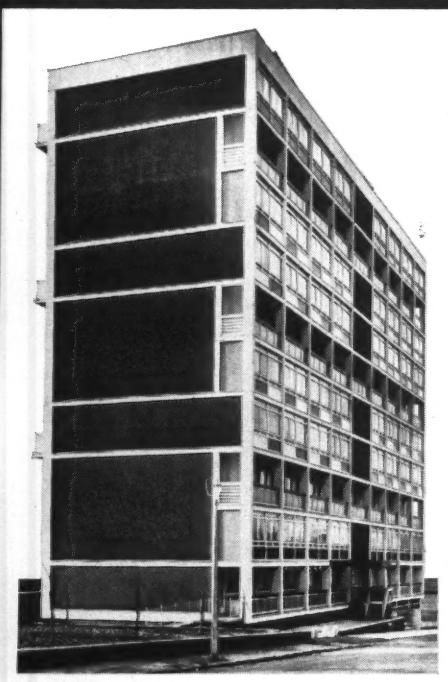
**Engineering Laboratories, Edinburgh** Architect: R. Gardner-Medwin (in association with Stephenson, Young & Partners). General contractor: Crudens Ltd. Sub-contractors: Steelwork: Redpath Brown Ltd. Heating and ventilating: Richard Crittall & Co. Electrical: Wm. Allan Smith & Co. Precast concrete floors and roof: James K. Millar & Co. Thermoplastic floor tiles: Limmer & Trinidad Lake Asphalt Co. Mosaic and terrazzo: Toffolo Jackson & Co. Core rail and balustrading: Marley Tile Co. Sanitary fittings: Shanks & Co. Paints: Imperial Chemical Industries Ltd. Inertol Co.; British Dolomac Co. Felt roofing: Wm. Briggs & Sons. Windows: Quicktho Engineering Ltd. Glazing: Northern Glazing Co. Electric lifts: Glasgow Engineers Ltd. Acoustic materials: Hermeseal Acoustics Ltd. Bituminous macadam paving: W. G. Walker (Edinburgh) & Co. Mastic asphalt tanking: Limmer & Trinidad Lake Asphalt Co. Linoleum flooring: Neuchatel Asphalt (Contracting) Ltd. Blacksmith work: S. & P. Blair; Peter Heatley & Co. Window blinds: Accordo Blinds Ltd.

**Motor Showroom, Ewell, Surrey.** Architects: William H. Arend and Son. Contractors: Reinforced concrete: Truscon Ltd. Roof cladding: Robertson Thain Ltd. Linotol floor finish: Maxwells (Hove) Ltd. Joinery: Camden Works Ltd. Ironmongery: James Gibbons Ltd. Architectural metalwork: W. T. Allen & Co. Electrical fittings: Falk Stadelmann & Co.

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